

The United States MILLER

Volume 7.—No. 4.

MILWAUKEE, AUGUST, 1879.

Terms: \$1.00 a Year in Advance.
Single Copies, 10 Cents.

Nagel and Kaemp's System of Roller Milling.

Mr. President and Gentlemen of the National Association of British and Irish Millers:

I have been invited to read a paper before you to-day upon the subject of Roller Mills. This is a subject which, it is almost needless for me to say, is at the present time exciting a very great amount of interest amongst millers, and it is therefore with the greater pleasure that I find myself enabled to bring under your notice some remarks upon this most important subject, and which I hope may prove to be worthy of your consideration.

To many who are connected with the profession of milling there appear signs that the millstone, after a long life, has, at length, nearly run its course, and it is not altogether without some regret that we foresee the possibility, perhaps at no very distant date, of having to bid adieu to so old and useful a friend. In the face of keen competition at home, however, and the ever-increasing facilities for the introduction of foreign flour into this country, it becomes a question of the greatest moment to British and Irish millers by what means they may best hold their own. I have said that the millstone is an old friend, but it is equally true that we have another which is older still, and one, moreover, which has received but scant justice at our hands,—I refer to the grain.

It is, perhaps, needless, to remind you that up to a comparatively recent date vast quantities of valuable middlings, which might have been converted into fine flour, were virtually wasted. The introduction of middlings purifiers throughout the country has caused a great saving in this direction, and the value of these machines as a means of treating the middlings is now almost universally acknowledged to be an established fact, for, whether we afterwards reduce the middlings by stones or rollers, the result will show that a decided advantage has been gained by the previous process of purification.

The application of roller mills—both of porcelain and chilled iron—to the reduction of middlings has proved these machines to be very valuable assistants to the miller.

Centrifugal dressing machines have also aided to no small extent in the general improvement which has taken place in the manufacture of flour during recent years, while to those I have mentioned may be added many more improvements which have been gradually adopted, and have, in a greater or less degree, been the means of enabling millers to do greater justice to the grain by turning it to better account than it had been possible to do before these improvements were adopted. It is, however, an undoubted fact, that every alteration does not of necessity constitute an improvement, and, unfortunately, alterations have occasionally been made in flour mills which have demonstrated the truth of this in a very decided and unpleasant manner, and consequently engendering a natural hesitation on the part of the miller to whom any proposal is made, the carrying out of which would entail the sacrifice of at least a portion of his existing plant. When the question of success or failure of any proposed alteration, upon an extensive scale, is felt to be a matter of deep interest to the milling profession in general, it would appear scarcely fair that the total expense of making the trial should be borne by one individual or one firm, who can reap no benefit whatever in case of failure, while in the event of success attending the trial the benefit will be immediately shared by the whole profession at large. I venture to anticipate that your Council will, in their wisdom, at some future date take into their consideration the question as to whether some combined action on the part of the National Association of British and Irish Millers may not with advantage be resorted to, with a view to forwarding the interest of

the profession at large, and also to avoiding individual loss.

Messrs. Nagel and Kaemp, of Hamburg, who have made milling engineering a special study, have perfected and patented a system of manufacturing flour by means of roller mills and other machinery, and without the aid of the millstone. I was entrusted by these gentlemen with the introduction of their system into Great Britain and Ireland, but not until the system had been thoroughly tested and proved satisfactory, under their own supervision, on the Continent.

Bearing in mind the fact that Nagel and Kaemp's system had not as yet been tested upon English wheats, I anticipated some difficulty in procuring an opportunity of erecting it; but I was fortunate enough to meet with gentlemen who, after investigating the matter, had the courage to adopt the system, and it was with great satisfaction that I ascertained that the system proved equally satisfactory when operating upon soft English wheat as it had previously been when operating upon the harder foreign grain.

It is Messrs. Nagel and Kaemp's system of roller milling which I am about to have the pleasure of describing to you, and I trust that, by sparing you such details as are not absolutely essential to affording a general idea of the process, I may have the satisfaction of feeling that I have not abused your indulgence.

The thorough cleansing of the wheat before the reduction of the grain is proceeded with is a necessary adjunct to every process of milling, and Nagel & Kaemp's system forms no exception to this rule. The better the wheat is cleaned the more satisfactory will be the result, so long as the grain itself contains no injury during the cleaning process.

Messrs. Nagel & Kaemp's system consists:

1. In the crushing of the corn, bran, and middlings between rollers, the pressure of which, as also the space between, can be conveniently regulated.
2. In the thorough loosening of the parts which have been crushed asunder in the roller mills by means of a machine termed a "disintegrator," the intensity of the action of which may be adjusted to suit the material upon which it has to operate.
3. In separating as completely as possible, by means of centrifugal dressing machines and middlings purifiers, the material after leaving the disintegrators, and in order to produce the pure finished flour, the pure middlings, and the finished bran.

Nagel and Kaemp's roller mills, each of which contain but one pair of rolls, revolve at equal speeds or *without* differential motion. The surface of the rolls is formed of the hardest chilled iron, and is perfectly smooth. The roller shafts are of cast steel, each shaft being carried by two bearings, the shells of which are constructed in such a manner that in the event of the elasticity of the shaft when working under heavy pressure allows of the very slightest deviation in the direction of the centre line of the shaft where it passes through the bearing, the shell of the bearing will immediately respond, by turning on its centre, so as exactly to follow the direction of the shaft, presenting thereby the whole of the surface of the bearing to the shaft and obviating any tendency to excessive heating.

At either end of the shaft which carries what is termed the "fast" roller, a pulley is fitted, motion being imparted by this means to the whole machine. The corresponding or "loose" roller is made to revolve by the pressure of its periphery against the periphery of the "fast" roller, differential motion and consequent friction being thereby entirely avoided. It is necessary to bear this fact in mind, for it is to the almost total absence of friction throughout the process that the success of the system is to a great extent due.

The bearings of the "loose" roller are carried by one strong semicircular cast iron arm

or lever, by which the regulation of the roller mill is directly effected. An apparatus containing a strong steel spring is applied to the centre of the lever, whereby an elastic pressure may be imparted, as also the space between the rollers altered at pleasure. These two distinct operations are performed by means of a single hand-wheel. Conspicuous self-registering gauges are fitted upon the front of the frame, and these enable the foreman miller to ascertain at a glance both the amount of pressure that has been applied, as also the position of the rollers in relation to one another. The man in charge of the machines may, by means of the hand-wheel already referred to, with one hand ascertain the state of the crushed material, and with the other regulate the machine to suit his purpose, precisely in the same manner as he may have been accustomed to regulate his stones.

The convenience with which the roller mills may be regulated permits of the same machine being used for crushing either wheat, bran or middlings; the plan is, however, not advisable in the case of a continuously working system, and where each of the several products should have their proper roller mills assigned to them. The diameter of the rollers is considerably greater than that which has hitherto been generally thought sufficient for this class of machine; the bearings, as well as the whole construction of the machine, has been arranged with a view to working at a high speed with perfect safety, and when occasion requires (as, for instance, the operation of rolling the bran) under a heavy pressure. The large size of the rollers and the high speed at which they work enables a large quantity of material to be operated upon with good effect.

THE DISMEMBRATOR.—The disintegrators which receive the crushed corn, bran and middlings from the roller mills, are machines which in so far resemble Carr's well-known disintegrator, as they contain discs fitted with concentric rows of teeth. Nagel and Kaemp's disintegrator has one stationary disc and another which revolves at a greater or less speed according to the nature of the work which the machine is called upon to perform. Both discs (which are of steel) are fitted with concentric rows of steel pins, the pins of one disc overlapping those of the other by nearly the whole length of the pins.

The material to be operated upon enters at the centre of the stationary disc, and by centrifugal force is driven towards the periphery, passing on its course through the several concentric rows of teeth or pins, by which the material becomes tossed and knocked about until the parts which have already been crushed asunder by the rollers become thoroughly loosened from one another, and thereby prepared for the subsequent treatment by the centrifugal dressing machines.

I would here, gentlemen, request you to bear in mind that it is *not* with a view to pulverization that these machines are applied. The speed at which the discs revolve imparts a more gentle action than that which would be necessary in order to pulverize the material. This more gentle action is desirable upon several accounts, and especially in the case of the bran, which it is the object of the patentees to preserve as broad as possible. The bearings of the steel shaft which carries the revolving disc are arranged in a similar manner to those which I have already attempted to describe in the case of the rollers; special care has, however, been taken in the case of the disintegrator, to enable the shafts to revolve at an exceedingly high speed, if necessary; and so satisfactory have been the results that although many machines have been, and are, running at a speed exceeding 8,000 revolutions a minute, I am unaware of a single case where the bearings have become dangerously hot.

By way of demonstrating the small

amount of friction in the bearings, I would mention that within the cast-iron frame of the machine, small tanks are constructed for the purpose of receiving the oil coming from the bearings, and, notwithstanding that the quantity of oil is small when drawn off from the tanks, the oil presents apparently as clear an appearance as when it was poured into the oil cup. The disintegrator is driven by a small pulley which is placed upon the disc shaft, the belt driving this pulley being kept in a proper state of tension by means of a tightening attached to the machine; the position of the tightening pulley may be altered whilst the machine is in motion. A cast-iron hopper fitted with a feed roller is attached to the machine, and an arrangement is effected whereby the air is, so far as possible, prevented from entering the machine. The inlet being closed, and the air being forced from the centre of the discs by the action of the revolving discs and pins, a partial vacuum results, relieving the internal moving parts to a great extent from the resistance of the atmosphere, and enabling the machine to be driven with a small amount of power. The partial vacuum created within the machine is increased by the action of an exhaust, between which and the disintegrator a filter is applied, the main object of this being to draw off the moist air before the material enters the elevators which shall convey it to the centrifugal dressing machines.

CENTRIFUGAL DRESSING MACHINES.

We have now come to the third process, namely, the operation of dressing the various materials which have passed through the several roller mills and disintegrators. You are doubtless all more or less acquainted with the principle of the centrifugal dressing machine, and with regard to this it will be unnecessary to trouble you further than to remind you that it consists in a slowly revolving cylinder, which is coated with either perforated zinc or silk, and within which is a shaft revolving at a higher speed, and which is fitted with curved beaters having the form of a screw with a very great pitch. The cylinder may be placed in a horizontal position, the inside beaters catching up the material to be dressed whilst in a state of suspension, and throwing it with a gentle action against the entire surface of the coating of the cylinder; by this means the different particles are separated from one another and assorted according to their specific gravity and size. The advantage of this in the case of sizing middlings will at once be apparent, and it is of no less importance in the case of flour. Indeed, I may, perhaps, say that it is in one respect of greater importance in the latter case than in the former, for that light dust which, when mixed with the flour, has the effect of spoiling the color, may be separated from the middlings during the process of purification, but the desirable separation is accomplished by the centrifugal dressing machine through the beaters throwing the heavier particles forming the fine flour with greater force against the cylinder coating than the lighter particles of dust. The dust remaining inside of the cylinder is, together with the other parts of the reduced grain possessing less specific gravity or greater size than the particles of flour, gradually worked towards the tail end of the machine, where it finds its exit.

The remaining machines which are used in Nagel & Kaemp's system are the middlings purifiers for purifying the various assortments of middlings after they leave the dressing machines.

Having given a general description of the construction of the machinery used, I will now proceed to explain the process.

The cleaned wheat is first passed through one roller mill, and after being crushed enters one disintegrator, where the crushed parts of grain become thoroughly loosened from one

[Concluded on page 58.]

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, 62 GRAND OPERA HOUSE, MILWAUKEE, WIS.
 Subscription Price.....\$1 per year in advance
 Foreign Subscription.....\$1.50 per year in advance
 All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.
 Bills for advertising will be sent monthly unless otherwise agreed upon.

MILWAUKEE, AUGUST, 1879.

SUBSCRIBERS changing their location and writing to us to send the MILLER to their new address, will confer a favor by stating what their former address was.

WE intended to have given our readers a review of the milling interests of Milwaukee in this number but as many extensive improvements are being rapidly made, which will soon be completed, we defer it to another month.

We will send a copy of the MILLERS' TEXT BOOK, by J. McLEAN, of Glasgow, Scotland, and the UNITED STATES MILLER, for one year, to any address in the United States or Canada, for \$1.25. Price of Text Book alone, 60 cents. Send cash or stamps.

WE thank our milling friends throughout the country who have sent us items of news. We are always pleased to receive these favors, and hope our readers will bear the UNITED STATES MILLER in mind when anything transpires worth recording.

WE have in our possession a wonderful specimen of penmanship, in which the Lord's Prayer complete is written four times inside of a space covered by a gold dollar. The work was executed by Prof. Lowell Lincoln, who was drowned on the Seabird, April 9th, 1869.

NEW WINTER WHEAT.—The first arrival of the crop of 1879 (101 sacks) was received at St. Louis on the 12th of June, and was sold at auction the following day at the fancy rate of \$1.50 per bushel. The wheat was grown in New Madrid Co., Mo., and was purchased by the Atlantic Milling Co. from the consignees, Senter & Co. The first arrival of the crop of 1878 was on June 7, from Illinois, and sold at \$1.25. —*The Miller (London.)*

DEATH OF DELOS L. FILER.—Saturday, July 26th, Delos L. Filer, of the firm of Filer, Stowell & Co., of the Cream City Iron Works, Milwaukee, died at Ludington, Mich., aged 62 years. Mr. Filer was a resident of Milwaukee, but for many years has been largely interested in business here. He was one of the heaviest dealers in and manufacturers of lumber in Michigan, and at the time of his death was President of the Pere Marquette Lumbering Co. He had been ailing for some time, but attended to business until ten days before his death.

THE WINTER WHEAT MOVEMENT.—Never in the history of Cincinnati has there been such a trade in wheat as during the past three weeks. The movement has been so large that all ordinary facilities for transportation have proved inadequate, and the railroads have been obliged to increase their equipment by drawing cars from the Northwest, but still the facilities are not equal to the demand, and shippers have to wait for cars. The wheat comes mainly from Kentucky and Indiana, where the crop proves to be large beyond the most sanguine expectations, and the marketing of it so early in the season draws money to the country commercially tributary to Cincinnati, which cannot fail to have a salutary influence upon the general trade of the city during the autumn months. The receipts of wheat there from July 1 to July 23, inclusive, amount to 1,215,454 bushels. For the corresponding time last year the receipts were 800,587 bushels, which up to that time was the largest known. The increase this year is 414,877 bushels, or over 50 per cent. —*Cincinnati Price Current.*

STATISTICAL.—The values of exports of domestic merchandise during the fiscal year 1878 were \$680,709,268; in 1879, \$698,334,951. Values of exports of foreign merchandise for the fiscal year 1878, \$14,156,498; in 1879, \$12,093,792. Values of imports of merchandise during the year ending June 30, 1878, \$497,051,632; June 30, 1879, \$445,792,141. The total value of exports of merchandise for the year ending June 30, 1879, exceeded the value of imports of merchandise \$204,636,002, as against excess of exports over imports the preceding year amounting to

\$257,814,234. Exports of coin and bullion the last fiscal year, \$24,996,641. Imports of coin and bullion, \$30,293,000. During the preceding fiscal year the exports exceeded the imports of coin and bullion \$3,918,811. The Chief of the Bureau of Statistics furnishes the following information derived from official returns in regard to immigration into the port of New York. There arrived at the port of New York during June, 1879, 19,268 passengers, 15,929 of whom were immigrants. During the corresponding period of 1878 the total number of passengers arrived at the port was 12,521, of whom 9,506 were immigrants. The arrivals during the twelve months ended June 30, 1879, as compared with the corresponding period of 1878, were as follows:

	1879.	1878.
Immigrants.....	99,224	72,163
Citizens of United States returned.....	36,458	22,706
Sojourners.....	6,249	5,193
Total.....	141,931	100,062

The Millers' Compromise.

A good deal of murmuring and muttering under the bed quilt, so to speak, is heard amongst millers from various sections of the country in regard to the recent compromise, and, probably, not without a good deal of cause. The discontented claim that the validity of Smith's claims was as well known to the Executive Committee of the National Association two or three years ago as it was at the time of the compromise. The fact is, that no such compromise could have been made two or three years ago, as was made during the session of the late Association, and so the committee decided to contest all claims until favorable terms could be made. It reminds us of the story of the Vermont politician whose opponent threw up to him the fact that his sister had given birth to an illegitimate child. In defense he said: "Yes, my friends and fellow citizens, Sister Sal did have a baby, but it was such a little bit of a dried and shrivelled up thing that it don't 'mount to nuthin nohow," and on the strength of that expression was elected. So it was with the compromise. The original claims have "dried and shrivelled up so that it don't 'mount to nuthin nohow," and the great majority of millers are willing to accept the situation and wait calmly and serenely for the next claimant who is sure to appear.

New Grade of Barley.

The Directors of the Milwaukee Chamber of Commerce have recommended the establishment of a new grade of barley. The present grades are defined as follows:

No. 1 Barley—Shall be of a bright, natural color, plump, sound, well cleaned and free from other grain.

No. 2 Barley—Shall be sound and reasonably plump, reasonably clean, and free from other grain—good malting barley, but may be slightly stained.

No. 3 Barley—Shall include all shrunken, discolored, but reasonably sound barley, and fit for malting purposes.

Rejected Barley—Shall include all barley unsound or for any cause unfit for No. 3, but fit for warehousing.

The proposed new grade, which takes an intermediate position between No. 2 and No. 3, is defined as follows:

"Extra No. 3 Barley—Shall comprise barley that is slightly unsound, or too much stained, or shrunken for No. 2, but otherwise meeting the requirements of that grade."

The old definition of the No. 3 barley is to be amended by striking out the word "all."

The proposed change or addition to the grades now established will render the barley grades identical with those of Chicago; that city having adopted the new grade proposed here one year ago. Much barley was diverted from this market to Chicago for the want of it, as the difference in price between No. 2 and No. 1, about 20 cents per bushel, involved a serious loss to shippers on the qualities described in the new grade, and much trouble to the receivers in bagging it out, and selling it on its merits. The intermediate grade, when established, will probably range in price about mid-way between No. 2 and No. 3. The full list of grades will be No. 1, No. 2, extra No. 3, No. 3, and rejected, designated as above shown.

HOW TO DIRECT LETTERS.—The importance of writing out fully the destination of missives sent by mail is not fully appreciated. To insure the greatest degree of certainty, the superscription should embrace the name of the town, the county and the State. Town names are duplicated in nearly all of the new States, or vary so little in the spelling that no certainty of destination can be assured, except the name of the town is supplemented by that of the county. Through neglecting to designate the State, delays and losses innumerable are occurring daily. It may seem superfluous labor to a man in haste to direct his letter fully to Boston, Mass.; New York, N. Y.; Washington, D. C.; or Milwaukee, Wis., but the necessity of it will be apparent when it is known that in the full list of United States Postoffices, the familiar names of well-known cities and towns are repeated as follows: Brooklyn, 18 times; Williamsburg, 10; Baltimore, 5; Bangor, 10; Boston, 12; Buffalo, 16; Burlington, 17; Charles-

ton, 17; Chicago, 4; Milwaukee, 4; Cincinnati, 8; Cleveland, 10; Louisville, 15; Nashville, 15; Philadelphia, 7; Richmond, 22; Washington, 30, and Springfield, 25. There are over 300 such repetitions on the list, and some thirty duplicates in different counties of the same State. To insure certainty of delivery, direct, (1) to the town, or city, (2) to the county, (3) to the State or Territory.

DISPATCHES dated July 29th, say that the crops in Hungary are badly damaged by the recent sudden great heat followed by heavy rain.

LATEST reports from Southern Russia show that the crops have been entirely ruined by the long drouth and innumerable swarms of locusts.

NEW CURE FOR HYDROPHOBIA.—Recently a little girl living in Paris was bitten on the hand by a mad dog. She soon exhibited signs of hydrophobia. Two Russian physicians, Drs. Schmidt and Ledeben, made the little patient inhale three cubic feet of oxygen. By this means in an hour and a half all the symptoms disappeared and the child remained calm. Two days afterwards the malady returned in all its distressing characteristics—difficulty in breathing and swallowing. A fresh inhalation of oxygen was tried and at the end of forty-five minutes the attack subsided, never to return.

AN OLD ENGINE.—A venerable relic of past engineering skill has been presented by the Earl of Lonsdale to the Patent Office Museum, South Kensington. This is a specimen of Heslop's winding and pumping engine, a patent for which, numbered 1,760, was taken out in the year 1790. Heslop's engine, one of the immediate predecessors of James Watts' invention, was considered in the days of our great grandfathers to be an almost perfect machine, being superior to the atmospheric engine of Newcomen, even as improved by Smeaton. The present engine has been at work in the neighborhood of Whitehaven for 73 years, having been erected at Kell's pit for raising coal about 1795, afterwards removed to Castlerigg pit, and thence to Wrenth pit in 1837. At the latter place it not only lifted coal out of the mine, but worked a pump till last summer, when it was brought to London. The engine now at South Kensington is the last survivor of its race.

CHEAP WHEAT IN THE SOUTH.—The wheat market, says the Chattanooga (Tenn.) Times, is becoming so thoroughly demoralized as to create some anxiety among buyers as well as growers. The trouble seems to be on account of the great supply furnished by Georgia. Our dealers heretofore have been quite active in filling Southern orders for new wheat, but this season they are receiving no orders at all from the South. The Southern mill owners write that they can buy all the wheat they can use at much lower figures than our merchants can buy it from the growers, which shows that, on account of the stringency of the times and scarcity of money, the farmers are compelled to dispose of it at any price. Our farmers are anxious to sell their crops, but say they can not afford to take the prices offered by our merchants and our merchants can not afford to pay them more. There is an immense crop, and it is of very superior quality, but the quantity rules the prices more than the quality. Georgia has grown an immense crop, and prices will not advance, but, on the contrary, recede, until this large crop is used up by the mills and the flour disposed of.

Correspondence.

A LETTER FROM WASHINGTON TERRITORY.

FORT COLVILLE, W. T. Editor United States Miller.—DEAR SIR: Having noticed several articles in your valuable and ever welcome paper in regard to the Cochrane case, I thought perhaps the following facts (which can be amply testified to if necessary) would be of some interest to the millers of the United States:

In the winter of 1866-7 I entered upon the construction of a machine to make farina. I think it was completed the last of January, 1867, and worked satisfactorily, making of purified middlings from 20 to 26 pounds of flour per bus. (60 lbs.) of wheat flour of the very best quality, equal I believe to any produced in the world from the same kind of wheat.

My machine has a capacity for making from 8,000 to 10,000 lbs. of farina (as we call it here, or middlings as it is called in the East) per day. I think there is a difference; the most of ours being much coarser. I send you a small sample of our No. 3 farina. We make some much coarser and some finer than the sample. We can make it perfectly pure, free

from specks, bran or anything else, so that it makes flour entirely free from specks.

I have just completed another machine to make farina or clean middlings; will have it in working order soon, and expect to make from 30 to 35 pounds to the bushel of wheat of No. 1 flour equal to the best.

If it meets my expectations I will, perhaps, communicate with you again. I inclose you a sample of No. 1 or farina flour; also of No. 2 or shelling flour. Please send in return a sample of the best purified middlings; also of the best No. 1 grade of patent flour; also please inform me as to the number of pounds of patent flour made from sixty lbs. of No. 1 wheat.

L. W. MEYERS,
 Fort Colville, Stevens Co., W. T.

Latest Rules on Table Etiquette.

Our able and influential contemporary, the *Christian Weekly*, gives some valuable hints on table etiquette, but we think it has not pursued the subject far enough. We beg leave to offer a few additional rules, which those who would be considered *au fait* would do well to bear in mind:

Always, after scratching your head at the table, knock the dandruff from your coat with the napkin.

If the waiter has neglected to place a spoon at your plate, ask for one. The hostess had rather you would ask for a dozen spoons than have you drink your soup from the side of the plate.

Do not speak with your mouth full. If you want to say anything take the food out of your mouth and hold it in your hand until you get through talking.

One's teeth are not to be picked at the table; but if it is impossible to avoid doing so, take them out and hold them under the table while you pick them.

Soup should be taken from the side of the spoon and not from the end, which latter is suggestive of swallowing both spoon and soup.

At the conclusion of the meal the knife and fork should be laid side by side on the plate with the handle pointing towards the right. It is a sign of low origin to leave the handles pointing towards the left, and in Boston they give a person the cut direct who crosses the knife and fork.

Of course, no genteel person will spit on the floor, nor is it considered just the thing to ask the waiter to pass the spittoon. Always spit in your napkin.

Do not pass the plate that is handed you to your neighbor. Keep it; you may not get another.

If you find a hair in your food be sure to call the hostess' attention to it, at the same time making some gallant remark about its matchless beauty, and place it carefully in the back of your watch.

An Englishman, "who had seen better days," was riding in the coach to Leadville, the new mining town in Colorado. "Will you please," said the Englishman, "open that window; I want to see the mountain scenery." An Irishman who was snoozing in a corner, looked up on hearing the remark, and observed, "Bedad, you'll see plenty of it a month from now when your coming back on fut."

Stuart & Douglass are putting a 20x42 Reynolds' Corlies engine into their new oat meal mill in Chicago. They purchased the engine of Ewd. P. Allis & Co., Milwaukee, Wis.

Ewd. P. Allis & Co. are making up about 2,000 yards of bolting cloth for three or four of the large Hungarian mills they are now building. They have also eight new orders for 30,000 feet of leather belt for same jobs.

The old Kilbourn mill, Milwaukee, is to be entirely rebuilt and remodeled according to the Hungarian style exclusively.

Cunningham's starch factory at Vincennes, Ind., burned July 29th. Loss \$150,000. Insurance \$50,000.

Special Business Notices.

Do you need a good Saw Gummer or Saw Tooth Swage? If so write to J. W. Mixer & Co., Templeton Mass. Agents wanted.

NOTICE.—Owing to the death of Mr. Edward Harrison, we take this method of informing you that the business will be continued until further notice, and that all orders will receive prompt attention. Letters should be directed to the "Estate of Edward Harrison," New Haven, Ct.

IMPORTANT NOTICE TO MILLERS.—The Richmond Mill Works and Richmond Mill Furnishing Works are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore, to save delay or miscarriage, all letters intended for this concern should be addressed with care to Nordyke & Marmon Co., Indianapolis, Ind.

NEWS.

EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

It is said that the large flouring mill at Oconomowoc, Wis., has or is about to change owners.

Edward Rupling, miller, of Stillwater, N. J., is dead.

The storms throughout the Northwest during the early part of July did great damage to growing crops, and destroyed much valuable property.

The Park Mills at St. Louis, Mo., are being overhauled.

A new steam mill is being erected at Warrensburg, Mo.

Scanlan & Smith are building a new elevator at Hopkins, Mo.

Notwithstanding the lightness of the crops in the Canterbury district of New Zealand, the aggregate yield of wheat, oats and barley is said to be about one-fourth greater than last season. In the Otago district, the wheat crop has diminished by 370,000 bushels, but oats show an increase of 2,000,000 bushels and barley a small gain. New Zealand, therefore, proposes to export a few millions of bushels of wheat.

H. D. Rush, Leavenworth, Kas., is overhauling and enlarging his mill. Two additional runs are being added, making it an eight-run mill and one of the best in the State.

Chas. Lovelace & Co. are enlarging and improving their mill at Wyandotte, Kas.

E. O. Stanard has added five run more burrs to his Eagle Mill at St. Louis, Mo.

The boiler in the steam flouring mill at Carlisle, Ky., owned by Rogers and Bastian, exploded on the morning of July 8th, throwing the engineer, Jas. Summers, a distance of 40 feet. He was fearfully mangled and died in two hours. Loss to the mill, about \$3,000.

A correspondent of the LaCrosse Chronicle writing about Galesville, Wis., says: "The largest and most successful business institution in the town is the flouring mill of Mr. Wilson Davis, a large four-story stone structure, that has made its owner many dollars in its time and still continues to grind them out for him. It has a magnificent water power, the entire Beaver Creek, and the pond formed by its dam, is a very fine sheet of water that extends a mile or more up the valley to the east of the village, making an exceedingly attractive feature in an already beautiful landscape."

John Getty & Co. are building a new four-run steam mill at Ellsworth, Kas.

W. T. Soden, Emporia, Kas., is overhauling refitting, and greatly improving his mill.

Leonard & Richardson are building a very fine grain elevator at Morris and Leonard, Mo.

The Semple & Birge Manufacturing Company, of St. Louis, Mo., failed July 7th. It seems probable that matters may be so adjusted as to allow this old business house to go on again.

The old Eagle Mill, now used as a cooper shop by J. B. A. Kern, was the second mill of the kind built in Milwaukee. The "City Mill," set in motion in the fall of 1844, was the first. Both were operated by John Anderson, who built the dam for the Rock River Canal Company. In 1847 he built the mill conducted by the late Col. Amos Sawyer.

During a thunder storm Mr. Christian, a miller of Marion, Minn., was struck by lightning and terribly disfigured.

The Red Wing Mill Co., Red Wing, Minn., are about to erect an elevator with a capacity of 100,000 bushels.

P. Fleming, miller, of Orland, Cal., has made an assignment.

An elevator is being built at Renville Station, Renville county, Minn., and the people are anxious to have a grist mill also.

Wheat has been brought as far as sixty miles to be ground at the mill at Roscoe, Dakota.

The Ames mill at Northfield, Minn., has shut down for three months to put in new machinery.

Smyth & Smyth's grist mill at Merriton, Canada, was recently destroyed by fire. Loss, \$2,000; partially insured.

C. H. Jenison, of Two Rivers, Wis., and Mr. Chase, of River Falls, Wis., are building a flouring mill at Lake Park, Becker county,

Minn. They expect to have it ready to begin work by the time the new crop comes in.

Charles T. Rogers, miller, Chelsea, Mich., has moved away.

A sad accident happened in Louis Apple's mill at Mooresville, Ind., on the 26th June. The six year old son of the proprietor while playing in the mill, fell between the wheel and the stone work and was instantly crushed to death.

Forestburg, Dakota, will soon have a flouring mill.

Silas Barkley, a well-known and prominent miller, has commenced the erection of a new flour and grist mill at Hulmeville, Bucks county, Pa. The mill will be of stone, 32x40 feet, four stories high, with a frame storehouse for grain, 32x25 feet, attached. The machinery will consist of four runs of stones, with all the modern attachments and five water wheels will be put in to do the work.

The Archibald Mill at Dundas, Minn., is to be made 35 feet higher by the addition of two stories and a balloon frame on top, and engine house built to accommodate a large engine. Machinery will be added to increase the capacity of the mill to 800 barrels per day. The contemplated improvements will cost about \$30,000.

Mr. C. E. Conley has built a new process three-run mill at Bloom Center, Logan county, Ohio. George C. Yager will be the miller.

R. M. Judy, of the Atlanta Mills, Ga., has just sold them to Philo A. Marsh, of Peoria, Ill. Mr. Marsh will take possession Oct. 1st.

The Empire, Reciprocity and Lake Ontario Flouring Mills, with elevators attached, at Oswego, burned July 24th. Loss, \$150,000; insured, \$83,000. The adjoining buildings were badly damaged by fire and water.

Careful estimates of the wheat crop of Michigan gives the yield per acre as 19.9 bushels, giving a total probable yield for the season of almost 31,300,000 bushels. This is more than double the yield of 1873, and 8,000,000 bushels greater than the yield of 1877.

The coopers of Milwaukee have formed a Union, of which Albert Kaus is President and Louis Ries Secretary.

Messrs. King & Moore's mill at Mormon-town Corners, Taylor county, Iowa, was damaged to the extent of about \$1,000 by the recent heavy rains. The frame and flood gates were destroyed and the foundations badly damaged.

C. N. Wilcox, proprietor of the Oxford Mills near Cannon Falls, Minn., is building a stone engine house 32 feet long and 30 feet wide, to contain a 73-horse power engine which will be used when the water power fails or is insufficient.

Messrs. Kimball & Beedy, of Forest City, Minn., have just put in a new 66-inch turbine, made by Stout, Mills & Temple. They have also moved their flume outside of the mill and run by belt, and have put in a new hurst frame for their seven run of stone.

The Mazeppa Mill Company, Mazeppa, Minn., are going to overhaul and repair their mill and increase its capacity to 300 barrels per day. Messrs. W. F. Gunn and R. G. Shuler, of Minneapolis, Minn., have the contract for the work, which will be done under the immediate supervision of Mr. J. Hull. The improvements will be completed in time for the new crop.

A new elevator has just been completed at Linden, Mich.

A large flouring mill is soon to be built at Oakwood, Dakota.

Hixon Bros. are putting in a three-run mill at Granite Falls, Minn.

Mr. H. A. Brintell is building a grist and saw mill at Judd's Corners, Mich.

Patterson & Rice, of Ohio, Mich., will soon have their flouring mill in operation.

Work has been commenced on the new dam for the Cascade mills at Osceola, Wis.

J. B. M. Kehlor & Co., of St. Louis, Mo., are building a flouring mill at Edwardsville, Ill.

The new flour mill at Bismarck, Dakota, has reached its fifth story and will soon be roofed.

Messrs. Wulff, Walker & Co.'s new grist mill at Neenah, Wis., is finished and ready for work.

The crop reports from Russia partly contradict those previously made. According to an Odesa journal of the 24th of June, the condition of the crops in the South of Russia and in the Caucasus is almost worse than it has ever been. That which remained, injured by the drought and then by the hail which

followed, is now destroyed by the enormous quantities of grasshoppers and blackbeetles. The crops in the neighborhood of Odesa and in the Southern Russian provinces of Bessarabia, Ecaterinoslav, Cherson, Poltava, and in the Caucasian provinces of Tiflis, Terak, Baku, Stawropol and Kutais, are, according to this statement, almost entirely destroyed.

At the Berlin Millers' Exhibition there were 50 different roller mills and 23 centrifugal dressing machines.

The Toufflin system is being introduced into Somaroff, South Russia, where a mill equal to 30 pairs of stones is being erected. The machinery is supplied by Rose Freres, Rue de Viarmes, Paris.

The Buda-Pesth milling trade has sustained a severe loss by the recent death of Mr. Josef Ullmann, the much respected and widely known director of the Pannonia steam mills at Pesth.

Chas. T. Rogers, of Ann Arbor, Mich., has sold his flouring mill to L. E. Sparks for \$4,000.

At the Berlin Exhibition of milling machinery, a gold medal for distinguished services rendered to the progress of milling was awarded to Mr. F. Wegmann, of Zurich, and a similar medal was given to Messrs. Nagel and Kaemp, of Hamburg. Messrs. Ganz & Co., of Buda-Pesth, obtained a silver medal for progress in chilled iron roller mills, and Millot, of Zurich, a similar prize for services rendered to the progress of milling. The above prizes were given by the Minister of Commerce. The Millers' Association awarded a silver medal to Mr. Oscar Oexle, for services to the progress of milling.

A. J. Stroup, of Elk Mills, Mo., is building a flouring mill.

W. D. Deans & Co., of Belknap, Ill., are having their mill remodeled.

Nordyke & Marmon Co., of Indianapolis, Ind., are building a two-run steam mill for J. A. Keller, of Tunnel Hill, Ky.

Hill & Hill, of Sanborn, Ind., are enlarging their mill to a four-run new process mill.

Foreman & Carter, of Browning, Mo., are building a three-run merchant mill with Atlas engine.

Sloan & Parkinson, of Blanche, Texas, ordered new machinery for a three-run water mill.

A new two-run water mill is going up at Wichita, Kansas. The proprietors, the McMahon Bros., purchased their machinery of Nordyke & Marmon Co., of Indianapolis, Ind.

Daily, Russell & Williams, operating large mills at Crestline and Nevada, Ohio, are putting in middlings buhrs and machinery in both mills.

S. T. Cummings, of Oxford, Mich., is building a new flouring mill.

Jos. W. King, of Twin Grove, Ill., is enlarging his mill and adding two run of buhrs, bolts, elevators, purifiers and other machinery. Nordyke & Marmon Co., of Indianapolis, Ind., have the contract.

A new brick flouring mill with three run of buhrs, is being built at Olmstead, Ky., by W. E. Boyd.

The old mill at Auburn, Ky., is giving way to a new patent process mill with latest improvements. The proprietors, Messrs. Gordon & Griffith, get their machinery at Indianapolis, Ind., of Nordyke & Marmon Co.

Sugg, Harmes & Co., of Fayetteville, Tenn., are building a custom mill.

J. W. Ground, of Augusta, Kan., is putting in two run of buhrs, purifiers, elevators, etc., in his mill.

A three-run steam mill is being built at Wheatland, Minnesota.

J. Shideler's mill at Attica, Ind., is being overhauled by Nordyke & Marmon Co., of Indianapolis, Ind.

Hixson Bros., of Granite Falls, Minn., are building a three-run water mill.

A four-run new process flouring mill, driven by a Corliass engine, is being built at Ellsworth, Kan., by Getty & Co. Nordyke & Marmon Co.'s machinery, manufactured at Indianapolis, Ind., will be used in this mill.

The 40,000 acre Grondin farm, near Fargo, D. T., will be supplied with a steam mill, the machinery for the same being furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

Edw. P. Allis & Co. have orders ahead for fifteen of the Reynolds-Corliass engines.

The millwrights have commenced work on the White, Listman & Co. mill at LaCrosse, and the large 20-run mill for E. V. White & Co., of Minneapolis, Minn., both of them fine

mills, one being built and furnished complete by Edw. P. Allis & Co., of Milwaukee, Wis.

A large shipment of "violet" millstone blocks has just arrived consigned to Edward P. Allis & Co., Milwaukee, right from the quarries.

Edward P. Allis & Co. are now working on contracts which will require over 3,000 yards of bolting cloth and 30,000 feet of belting.

Edward P. Allis & Co. have closed a contract with E. T. Archibald & Co., of Dundas, Minn., to entirely rebuild their large mill on the Hungarian system.

Jere Ames & Sons, of Northfield, Minn., are putting in a large lot of roller machines which they purchase from Edward P. Allis & Co., of Milwaukee.

Edward P. Allis & Co. have orders for over 200 roller machines.

The Milwaukee & St. Paul R. R. Co. have purchased an 18 x 48 Reynolds-Corliass engine for their new shops from Edward P. Allis & Co., Milwaukee.

The Milwaukee Middlings Millstone Company have sold five 16-inch mills to Mr. C. L. Colman, of Winnebago, Minn.

The Milwaukee Middlings Millstone Company have lately received a number of orders from various parts of South America.

We learn that the Milwaukee Middlings Millstone Company have established an agency in Germany and also in England.

The Middlings Millstone Company have been running their shops 24 hours a day for the past three months without intermission.

The Milwaukee Middlings Millstone Company are turning out four mills per day, or 125 every month.

The business of the Milwaukee Middlings Millstone Company is increasing so fast that they are now making arrangements to increase the capacity of their works.

The Milwaukee Middlings Millstone Company have a number of contracts in Colorado and California.

The Milwaukee Middlings Millstone Company are now rebuilding Mr. R. P. Owens' mill at Anoka, Minn., which was recently burned down.

The Milwaukee Middlings Millstone Company are refurnishing Messrs. Pratt & Co.'s mill at Champlin, Minn.

The Milwaukee Middlings Millstone Company have commenced work on the big mill in Milwaukee, which, when completed, will contain 100 of their little mills, and will be the largest mill on this continent. At present the building is to be erected 60 by 80 feet, and arranged to accommodate 50 mills, and at the end of the first year after starting an addition will be added the same size as the first building and the balance of the mills put in.

During the month of July the Cockle Separator Mfg. Company sold 40 machines.

The Cockle Separator Mfg. Company of Milwaukee have recently opened a trade with South America with good prospects, as the wheat there is said to be badly mixed with cockle.

The cockle machine, combined with their latest improved oat separator and suction, has proved a great success, and is used in the best mills throughout the country. Millers buying the combined machine will save themselves the cost of a separate oat separator, which is an important item.

Smith Bros., of Milwaukee, are rebuilding and enlarging the Winnebago City Mills, Minn., making it of 200-barrel capacity per day. C. L. Colman is proprietor.

Smith Bros., of Milwaukee, are making improvements in the Fredonia (Wis.) Mills, putting in bolt chests, etc.

Smith Bros., Milwaukee, are making plans for rebuilding the Saukville Mills, which were burned down two years ago.

F. W. Stark's mill at Hillsdale, Mich., which was rebuilt and enlarged by Smith Bros., of Milwaukee, was started last week and is working beyond expectation.

Messrs. Austin & Worden, of Minnesota Falls, Minn., are going to put in two new run of buhrs.

The mill dam at El Paso, Wis., was damaged to the amount of about \$100 by the recent freshet.

McSpaden's mill dam four miles from Houston, Minn., was badly washed out by the recent heavy rains.

Hermann Tezman, of Hastings, Minn., has filed a caveat for a mill-stone driver and bail which he has invented.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE, 62 GRAND OPERA HOUSE, MILWAUKEE, WIS.
 Subscription Price, \$1 per year in advance
 Foreign Subscription, \$1.50 per year in advance

MILWAUKEE, AUGUST, 1879.

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We send out monthly a large number of sample copies of THE UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. We are working our best for the milling interest of this country, and we think it no more than fair that our milling friends should help the cause along by liberal subscriptions. Send us One Dollar in money or stamps, and we will send THE MILLER to you for one year.

M'LEAN'S Millers' Text Book and the UNITED STATES MILLER, for one year, for \$1.25. Order now. Send money or postage stamps.

We kindly thank Mr. Wm. Dunham, of the London Miller, for early proofs of the report of the British and Irish millers' first annual meeting.

POSTAGE stamps taken in payment of subscription to the UNITED STATES MILLER and the Millers' Text Book. \$1.25 pays for both for one year.

A SUBSCRIBER who evidently believes in Shakespeare's saying, "Brevity is the soul of wit," in remitting for his paper, says: En. ind \$1, U. S. M., 1 yr. 8nd rept.

That miller don't propose to waste time on anybody.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

WHEAT CROP OF SOUTH AUSTRALIA.—The area of land under wheat is 142,205 acres in excess of the previous year, and the total quantity available for export is estimated at 176,350 tons, the average yield being estimated at seven bushels per acre.

THE following is the semi-annual statement of the Millers' National Insurance Co., 148 La Salle street, Chicago, July 1, 1879. Assets: United States bonds, \$10,000; treasury warrants, \$2,750; cash in bank, and subject to draft, \$24,620.89; premiums in course of collection, \$150; deposit notes subject to assessment, \$356,521.13. Total, \$396,521.13. Liabilities, none.

THE CINCINNATI INDUSTRIAL EXPOSITION.—The seventh exhibition, commencing September 10 and ending October 11, 1879, is announced, and all American inventors and

manufacturers are cordially invited to avail themselves of the advantages offered. All persons desiring to exhibit, should address without delay, H. McCollum, Secretary, Cincinnati, Ohio.

THE UNITED STATES MILLER has the largest circulation of any milling journal published in America, and was the first milling journal started in America entirely independent of connection of interest with some machine or mill-furnishing establishment.

JULY 10th the thermometer stood at 100° in St. Louis. If the next issue of the St. Louis Miller don't show the effect of ice water, we are mistaken. We know it is hard for the St. Louis boys to come to it, but in such cases it cannot be helped. With the thermometer up here in Milwaukee at 90°, some of the boys in the office have told us that ice-cold weis beer tastes remarkably fine.

WE hope all who receive sample copies of the UNITED STATES MILLER will favor us with their early subscription. The price—one dollar per year—is a mere trifle, and ensures you a first-class paper containing a great quantity of matter of direct interest to your trade. Do not delay, but send your order now. Entering, go-ahead millers cannot afford to be without the current milling literature of the day.

BUDAPEST MILLING INDUSTRY.—The usual yearly meeting of the Pesth Roller Mill Company was held on the 7th of June. The report presented by the Directors showed that the company had ground 1,600,000 bushels of grain during the past year, being 250,000 bushels in excess of the previous year. The net profit realized was 170,639.23 florins out of which sum it was proposed to pay a dividend of 15 per cent, the balance of 20,639.23 florins being placed to the reserve fund.

THE GERMAN MILLERS' ASSOCIATION.—The above named Association met in Berlin, Germany, June 21st, and continued in session until the evening of the 25th. The attendance was large and several papers of value to the trade were read. The exhibition of milling machinery of German, French, Hungarian, Austrian and American was large and attracted great attention. The exhibition room was 265 x 56 feet in size and 40 feet in height, and the space was well occupied. These exhibitions of machinery at millers' meetings are of much interest to both manufacturer and consumer.

MILWAUKEE PRACTICAL MILLERS' ASSOCIATION.—The above organization is now thoroughly established and have a regular place of meeting for debates, experiments, etc. The object is for the mutual improvement of its members and nothing else. Readings of questions and answers, essays and relation of the result of various experiments, with illustrations, will form the regular proceedings. The benefit of this will soon manifest itself. We wish this Association the most unbounded prosperity. Mr. Charles Mueller is President and Mr. Levi Hicks, Secretary. Their meeting and reading room is at 913 Winnebago St.

PORCELAIN MILLSTONES.—A German mill engineer in Potsdam has recently manufactured millstones of porcelain, which have been fitted up in a steam mill in Potsdam and have given, it is said, very good results. The stones consist of a hard, regular, porous mass of porcelain, and possess, we are informed, the qualities requisite in a good French burr. These porcelain millstones are claimed to be superior to all others. In the experiment above referred to, the upper stone was of porcelain, the lower one being a French burr. Specimens of porcelain millstones were exhibited at the Paris International Exhibition of last year, where they attracted some attention.

The Silver Creek Flour Packer.

Messrs. Howes, Babcock & Co., of Silver Creek, N. Y., have recently added to their line of manufacture the SILVER CREEK FLOUR PACKER. The reputation of this firm for handling only first-class machinery is a sufficient endorsement of the new PACKER. The trade of this well-known firm has been much heavier this season than last, and it includes a heavy amount of sales of the genuine DUFOUR bolting cloth, which has now such a favorable opinion from millers all over the country. The sales of the Eureka, the Eureka brush and the Eureka separator are very large, and they never fail to give satisfaction. All mill-owners who have not done so should send for circulars.

Nagel and Kaemp's System of Roller Milling.

[Continued from page 55.]

another; the material is now in a proper condition to enter the dressing machines. The produce of the dismembrator, after being elevated, is divided into two equal parts. Each portion enters a separate centrifugal dressing cylinder. The largest middlings and the heavy bran are by these cylinders separated from the rest of the meal, the latter passing into four cylinders situated below. The latter cylinders produce, besides several assortments of middlings, the first run flour. The percentage of flour so produced may be regulated with exactness by the setting of the rollers.

The heavy bran dresser already mentioned passes directly from the dressing cylinder into a second roller mill, and after being crushed enters a second dismembrator, passing through which it is conveyed into a single cylinder centrifugal dressing machine, which now dresses out the bran in a thoroughly finished state. From this machine the flour and middlings pass together into two centrifugal cylinders below, and from these machines, besides several assortments of middlings, the so-called "bran flour" is produced.

The several assortments of middlings now remain to be operated upon, and these, after being divided into different quantities, according to size and specific gravity, and after purification, are conveyed into three separate roller mills, each roller mill receiving its supply of middlings in a more or less uniform size. After being separately rolled, the whole pass together into one dismembrator, which operates upon the crushed middlings in a similar manner to that already described in the two previous processes. The produce of this dismembrator, is now divided into two equal parts and conveyed to two centrifugal dressing machines, and from thence into four cylinders situated below. The cylinders produce, besides several assortments, the first quality of middlings flour. The middlings which have thus been dressed out of the middlings or semolina flour are in some respects equivalent to those which are usually termed "tailings," but inasmuch as they are "sharper than the ordinary run of tailings, I take the liberty of retaining for them the more dignified title. These middlings or tailings are now once more conveyed to the purifiers, and from thence to three separate roller mills, where they are again crushed, passing afterwards together into one dismembrator. The product of this dismembrator is now conveyed to one centrifugal dressing machine, and from thence to two cylinders below. The tailings produced from these cylinders are, as a rule, not of sufficient value to be re-worked, but where the case is otherwise, the more valuable tailings may be re-purified and passed once more to the last-mentioned three roller mills, where a margin of capacity will be found to perform this occasional extra work.

It may, perhaps, not be out of place here to mention that a peculiarity of this system is that even after an almost endless process of re-rolling under heavy pressure, the tailings never attain to that soft consistency which is found in the case of tailings which have been dressed out of rolled middlings which have been produced by means of stones; this again is due to the absence of friction during the whole process of the reduction of the grain. This sharpness is caused by the particles of bran, and not from the fact of any valuable middlings remaining amongst the tailings.

This, then, gentlemen, constitutes Messrs. Nagel & Kaemp's patent system of roller milling, and I will, if you will bear with me a little longer, proceed to state some of the advantages which are claimed for it over the millstone.

By superseding the mill-stone we effect at once a considerable saving in the matter of working expenses by obviating the necessity of the costly operation of keeping the surfaces of the stones in good working condition. The mill-stone, by its imperfect action, absorbs an amount of power greatly in excess of that required by a more perfect instrument capable of performing the same amount of work and in a more satisfactory manner. The frictional action of the stones is avoided and superseded by the crushing and simple action of the rollers and dismembrators. The meal, instead of leaving the stones in a warm or even hot state, passes from the dismembrator in a perfectly cool or even cold condition. The bran is not torn or cut, but presents the sharp edge which it received upon the bursting of the grain under pressure of the rollers. In place of mill-stones we adopt roller mills and dismembrators, the working expenses of which

are light and the manipulation simple; moreover they are machines which may be applied to low, half-high and high grinding, by a simple alteration of the setting, which may be effected in the space of a very few minutes, and which facilitates the discovery of the most advantageous manner of treating each particular class of grain. The germ, which is reduced and mixed with the flour, to the detriment of its color and durability, by the action of the stones, is, by the operation of Nagel & Kaemp's system, simply pressed into a flat cake, which, being of a tough nature, passes harmlessly through the dismembrator and into the dressing machines, where, owing to its large size, it is easily separated from the flour and dressed out with the offals.

The flour produced by this system shows a distinct improvement, both as regards the quality as well as the quantity.

The improved quality shows itself in a marked manner when it is applied to the test of baking. The cause of the larger percentage of flour becomes at once apparent when the state of the bran is considered, the former being thoroughly separated from the latter without the bran being either cut or torn. The improved quality of the flour, and especially its capability of producing a larger quantity of bread from a given quantity of flour than from the flour produced by mill-stones, results from the absence of heating, and by the addition of flour produced from that part of the grain, so rich in gluten, which is found to be attached to the inside surface of the bran, and which has been parted from it by the pressure of the rollers without the bran itself being destroyed.

Besides the facility with which the machines may be applied to various classes of work, the wear and tear is very slight, and as every machine is manufactured to template, the removal of any part which in course of time may require repair may be effected without loss of time. The risk of fire is greatly lessened in consequence of the absence of the mill-stones.

The space required for the erection of the roller mills, dismembrators, and centrifugal dressing machines, with the necessary shafting, elevators and worms, is very small, the machinery occupying generally about one-half the room which has hitherto been considered requisite, and the absence of vibration enables the mill to be of lighter construction than that which is necessary where mill-stones are used.

The system may be partially applied where it is considered undesirable to replace the existing machinery altogether, and a proportionate advantage will by this means be gained; for instance, where it would be considered an advantage to grind higher with the stones were it not for the difficulty experienced in cleaning the bran, a partial system may be erected to operate upon this thick bran, and although the result will not be so satisfactory as when the whole process is adopted, yet a material advantage will be gained.

The question of power is always a most important matter; and in regard to this I may mention that after taking the average of five different mills, all working upon this system, it has been found that more than 40 pounds weight of wheat have been completely reduced to flour and offals per one effective horsepower and per hour, inclusive of the power absorbed by the cleaning machinery. It may perhaps interest some gentlemen present to compare this result with the work performed at their own mills.

Within a period of somewhat more than two years Nagel & Kaemp's system has come into operation either partially or entirely, in thirteen different mills, and several are now in course of erection or construction. It has been tried in England, France, Germany, and Hungary under widely different circumstances, but with an unvaryingly satisfactory result.

IMPORTANT NOTICE.

TO THE PARTY RECEIVING THIS PAPER WHO IS NOT ALREADY A PAID SUBSCRIBER.

We hereby extend to you a cordial invitation to become a subscriber to the UNITED STATES MILLER. We shall endeavor to make it of the greatest possible use and benefit to the milling fraternity, and no mill should be without it. The best talent that we can obtain in this and other countries will contribute to its columns, which will also be enriched by carefully translated articles on subjects of interest to the craft. Subscription price, \$1. Enclose money or stamps in an envelope, seal carefully, and send at our risk. By return mail you will receive a receipt therefor. Address

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[Translated from the German of Dr. Herman Klencke expressly for the UNITED STATES MILLER, cuts reproduced by our special engraver from the original.]

[Continued from July number.]

For the purpose of completeness and to enable our readers to apply the comparative examination by means of several different methods, we mention a few more of them recommended by chemists, which have by experience also been shown to be practicable. A very accurate method of examination is carried out by Donny, which is based upon the fact discovered by Payen, that a weak solution of corrosive kali which has no perceptible chemical influence on the starch particles of wheat, but has such influence on the potato starch as it increases perceptibly the volume of the particles. Keeping this fact in mind, some of the suspected flour is spread on a small glass (the object bearer of a microscope), its particles examined so as to become familiar with their form and size, with a microscope or strong magnifying glass, then dissolve in a weak solution of corrosive kali (about 1½ to 2 parts in 100 parts of distilled water), and the examination will now show that the particles of wheat starch will hardly change at all, while the particles of potato starch will expand into large, thin and translucent plates. This phenomenon may be rendered still more striking by adding a drop of a solution of iodine to the flour while it is dissolving, whereby the particles become of a bluish violet color. Potato starch by the action of corrosive kali is increased in volume from 12 to 15 times above that of wheat starch. Robine mixes 10 g. of wheat flour with 4 g. of bi-carbonic natron (natron bi-carbonicum), and gradually and in small portions adds 1-16 L. of water. When well mixed it is put into a glass, and in small portions diluted (wine) vinegar is added (2 to 3 spoonfuls of vinegar and 1 spoonful of water). It will effervesce, and a foam will be produced which is formed by the gluten and a portion of the starch. He now continues the adding of the diluted vinegar until it has entirely ceased to effervesce. Then he takes off the foam, puts it in a liquid which consists of 1-32 L. of a watery solution of iodine and a small quantity of alcohol. If the flour is good and pure the liquid will be rose-colored, as in the method of examination which we have before recommended as the simplest, and this rose color will disappear in a short time; but if the flour has been adulterated with potato starch the sediment will divide itself into two parts, the lower part blue which will not lose its color again, and the upper lighter color which will soon lose its reddish color. The lower sediment then is potato starch, the upper, wheat starch. Another method is that of the apothecary Carakin, in Toulon. A tin measure which will hold 2 g. of water is filled entirely with the suspected flour, and is then levelled by passing a straight stick or piece of board over it so that the measure is exactly filled. Then the flour is put into a flask with a glass stopper, but which must be rather wide at the neck, and hold about 50 g. of water. The flask has two marked lines, one showing the measure of 20 g. and the other that of 40 g. Before putting in the flour, the flask is filled to the lower mark (20 g.) with a liquid which consists of 80 parts solution of kali (of 1° areometer) and 12 parts of alcohol (at a temperature of 12°) of 34°. Now the glass stopper is put in and the flask shaken for two minutes, and then the mass is filtered through common filter paper into a cylindrical glass, which has marked lines for 1 g. and for 10 g. of water. If the filtrated mixture has now filled the glass to the lower graded mark (1 g.), water is added up to the second upper mark and the cylinder well shaken, so as to mix the contents well. Then 5 drops of acidized solution of iodine are added, that is to say 5 dg. of pure iodine dissolved in 50 g. of alcohol and then combined with 50 g. of pure pyroligneous acid (of 7°). If a greenish yellow color is produced by this addition of iodine after having been shaken, there is no potato

starch in the flour; if a dark green, there is an admixture of 5 per cent of it; if a bluish green, 10 per cent; a grayish blue, 15 per cent; a sky blue, 20 per cent; a dark blue, 25 per cent. Mayet has recommended a process which is based upon the consistency which a solution of corrosive kali imparts to the grain flour and potato starch. The consistency of the latter is much greater. By this process, 1-20 of potato starch in the flour can be detected. First the gluten is withdrawn from the flour in the well-known way, and for experiment 100 g. for example may be taken; the starch contained in the water is left untouched for some minutes; if it contains potato starch this will first settle on the bottom, and when the fluid is poured off, the sediment will consist almost entirely of it, only slightly mixed with particles of grain starch. The sediment is collected on a filter, and when freed from its water parts 10 g. of it are taken, dissolved in 100 g. of water, and then 10 g. of pure wheat starch are treated in the same manner and dissolved in 100 g. of water. Each mixture is now put into a glass, both glasses being exactly alike, and each holding 125 g., and then 10 g. of the solution of kali are added to each one. After six minutes the pure wheat starch will form a thick opaque mass, but which can easily be poured out of the glass, while the potato starch has become a perfectly jelly-like dough which cannot be poured out of the glass. Martens has proved that an admixture of 5 per cent of potato starch in flour may be discerned if it be grated finely in a very hard mortar (crystal). If water is added this will, after a few minutes, dissolve a little of the flour. The filtration will then yield a clear liquid, which will become blue from a solution of iodine, if there is potato starch in it, but will retain its clear color when the flour is pure, doubtless because the particles of wheat starch are finer and, surrounded by their gluten husk, were not pulverized in the mortar, and because only the inner central part of them is capable of being dissolved in cold water. There are still other methods of examination, but these may be left unconsidered here, since they are in reality based upon facts we have already mentioned. Wheat flour is also very often adulterated with other grain flours that are cheaper, especially with those of maize, rice, rye, barley and oats. This the microscope principally will disclose, since the starch particles of the flours named have different and characteristic forms. We refer to the engraving which we shall furnish when treating specially of each of the flours named. A particular adulteration of flour is practiced in England, where a certain mixture of flour which goes by the name of "Cones Flour" is produced and sold for the purpose of adulterating other kinds of flour. This flour is a common article, and in daily use with bakers in England; it is said to be used in Petersburg also, and there it is pretended to be the product of a special kind of wheat which is called revet. This "Cones Flour," as has been disclosed by examinations with the microscope, is not always the same; it often consists only of rice meal, mostly of a mixture of wheat, rye, barley, rice, bean and Indian corn meal; even salt and alum, carbonic lime and carbonic magnesia. When wheat flour is not missing entirely, it is found in only small quantity in the mixture.

[To be continued.]

ADVICE TO BATHERS.—With a view of diminishing the loss of life which annually occurs from drowning, the Royal Humane Society of England issues the following seasonable advice to bathers: "Avoid bathing within two hours after a meal, or when exhausted by fatigue or any other cause, or when the body is cooling after perspiration, and avoid bathing altogether in the open air if, after being a short time in the water, there is a sense of chilliness, with numbness of the hands and feet, but bathe when the body is warm, provided no time is lost in getting into the water. Avoid chilling the body by sitting or standing undressed on the banks or in boats, after having been in the water, or remaining too long in the water, but leave the water immediately if there is the slightest feeling of chilliness. The vigorous and strong may bathe early in the morning on an empty stomach, but the young and those who are weak had better bathe two or three hours after a meal; the best time for such is from two to three hours after breakfast. Those who are subject to attack of giddiness or faintness, and who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser."

National Association of British and Irish Millers.

FIRST ANNUAL MEETING.

The First Annual Meeting of this Association was held on Wednesday afternoon, June 11, in the hall of the Worshipful Company of Bakers, Harp Lane, London, E. C., under the Presidency of Mr. Alderman Hadley, for the transaction of general business, and for hearing papers upon matters of vital importance, read by gentlemen connected with the milling interest. There was a large attendance.

The President, who was received with applause, said: Gentlemen, I find, upon reference to our proceedings in the past, that there are really no minutes to be presented to the meeting, because the last meeting was an inaugural meeting. This is really our first annual meeting. Hence there is no report of our previous meeting to be presented to you, but only a report of the work which we have done during the past year, which would be read by the Secretary. I find that we met for the purpose of forming this Association at the Corn Exchange Hotel, Mark Lane, on the 11th of February, 1878. It was a most influential meeting of millers, and it was resolved that this Association should be formed. We met again at an inaugural meeting at the same place on the 29th of April, when the Association was really formed. I had the pleasure of presiding over the meetings on both those occasions, and I am sure it will be within recollection of all of you how interesting were the proceedings when we succeeded in launching into life the National Association of British and Irish Millers. To-day we have met to commemorate our first annual meeting, and I cannot but think that this meeting will be as successful as those which we held last year. The *Miller* stated in a recent issue that the programme we have to present to-day will be of an exceedingly modest character. Now I admit that is so, and I do not know that we are to blame for exhibiting to you our modesty, as there is nothing detrimental in the character of any person or association for aiming at modesty. But while we have given you a modest programme, I venture to think and to say that the programme really submits to you questions of the most vital importance, which must affect our trade, and which will ultimately, I think, bring to bear a large and vast amount of influence upon our progress and prosperity. Although, therefore, while we confess to our modest position and programme, yet I can assure you our inspirations are somewhat of a higher and nobler character. Now I may say that the successful formation of the Association might justly be regarded as its greatest achievement. At one period it was the general opinion that it was impossible to unite millers together in one body for the promotion of their common interests. But here, as in other matters, no sooner was there a real determination that the work should be done than what was deemed an impossibility became an accomplished fact. That, I repeat, is the greatest work we have yet achieved, because it is a creative work—the bringing something into being which had not previously an existence. With existence came in due time the aptitude and fitness for action, and when these had been brought into play all things became more or less possible. Among the causes which more immediately conduced to the organization of the members of the trade into an Association, not the least important were the establishment, in 1875, of the organ of our trade, *The Miller*, and subsequently *The Corn Trade Journal*. In these papers the theory and practice of milling were discussed and explained as, in this country, they had never been before; information relating to the modes of flour manufacture in other countries, and the machines used in the work, was freely given, and for the first time British and Irish millers had an opportunity of exchanging opinions on all matters affecting their trade, thus deepening and extending their interest in it. The ordinary vehicles of public opinion supplied all they cared to know respecting the political, social, and commercial condition of other countries, but until the journals I have named were established, their information as to the system of milling practiced abroad was of the most defective, vague, and unsatisfactory character. We have during the past year brought out and accomplished work of a most important nature, in the formation of different associations and organizations throughout the kingdom. We have established in London the Millers' Association, in Liverpool an association for Liverpool and district, as well as associations in Northampton, Colchester, Devon County, Herts, Wilts, Dorset, Sheffield, and other parts. In each of these associations

the millers have been brought together, and are engaged in the work of mutually extending their interests. The Association took a most important part in securing the legalization of the cental under the new Weights and Measures Act. Mr. Redgrave gave us an exposition in this hall upon the new Factories' Act. That act, as you are aware, would very materially affect every mill in this kingdom, and the Association has done much to bring before the millers generally the principles of the act, so that they might conform to what was binding upon them.

The subject of fire insurance will be brought before you by Mr. Appleton, who is to read a paper to you on the subject, and you will have an opportunity of discussing the best means of improvement in that direction. A meeting was held last year at Bristol, during the agricultural show week, which was the largest and most important meeting of millers ever held in a provincial town. We there formed Associations, and acquaintances, and mutual relations with one another which undoubtedly tended to promote, in that part of the country, a feeling which had not previously existed. That meeting would not have been held had it not been for our Association. I trust a similar result will be obtained this year in London at the Royal Agricultural Society's meeting, when I hope to see a large number of millers from every part of the United Kingdom, as well as from other parts of the world, co-operating with us in endeavoring to do what we can to assist our own particular branches of the trade. So far I have dealt with our work of the past. I have now to bring before you some indication of what our work must be in the future. Although during the past year the work of establishing district Associations has gone on as well as could be expected, still, if the Association is to be in the highest sense beneficial to the trade, greater efforts must be made to secure the organization of all the great milling centers of the kingdom during the present year. The question is, how is this to be done? Now there are many ways in which this could be promoted. One undoubtedly would be for us as an Association to issue circulars to all the leading millers in the various districts, and to urge upon them to gather together to consult and combine, and thus to assist in removing any evils which may exist in their special localities. Another way would be for our Secretary to go to the different localities and endeavor to organize meetings with the view of bringing members of the trade together for the purpose of explaining to them the advantages of organization. From the Commercial, Practical and Technical Committees reports had been expected, but that from the Practical Committee would only be presented. It is not my intention to detain you long to-day, because we have a considerable amount of work to get through, and I think you would prefer hearing some of the other gentlemen read their papers, which would be of greater interest to you than anything I can say. Mr. Simon and Mr. Sanderson are to read papers upon the manufacture of flour. You know that at the present time the millers throughout this Kingdom are suffering very much indeed from competition, not so much individual competition amongst themselves as from foreign competition. This alone shows the necessity for an organization of millers to protect themselves from being inundated with flour from abroad. The two gentlemen to whom I referred will read to you papers relating to the production of flour, so that possibly it may assist millers in being able to introduce some new system or other that will enable them to make that manufacture in such a way as to be able to meet this competition. To that end they should aim by getting all the light they possibly could on the best machinery and the most scientific, and, at the same time, most economical methods of converting wheat into flour. In connection with this I venture to affirm that it would be the means of doing away with local and personal jealousies if the trade were to combine heartily and frankly for mutual protection from the attack of foreign manufacturers. It is important to notice what the American millers are proposing, as exemplified by the speech made by Mr. Bain before the convention just held. In the course of his address Mr. Bain said:—"I see no reason why, with cheap fuel and large water power, cheap transportation, late improvements in the processes of milling, and first-class machinery in nearly every large mill in the United States, a bushel of wheat should leave this country except in the shape of flour. While our English friends justly ridicule the proposition of one of our Pennsylvania members, who seriously suggested an export duty on wheat, they kindly furnish us

a Roland for our Oliver in the person of a Lincolnshire miller, who just as seriously suggests, as the only remedy for the decadence of the British milling interest, the taxation of American flour, while American wheat should come in duty free." Now that gives us a clue to what we are threatened with from America, but it is not in protection nor in reciprocity to which we must look for relief. There is nothing to hope from that means, and it is folly to expect any permanent benefit from the adoption of reciprocity.

The Conservatives are now just as deeply committed to free trade as the Liberals. Only recently, the chief of the Conservative party, and leader of the present Government, utterly scouted the idea of adopting reciprocity, denouncing it as a phantom protection in disguise. Reciprocity means retaliation, and we as a country have been engaged in taking off duties, and showing to the world that we can, consistently with free trade principles, carry on a commerce unrivalled by any other nation. Our American brethren are, in consequence of the very high tariff on machinery, suffering from protection. They cannot avail themselves of the advantages of English invention and manufacture. They are thus placed out of the market as competitors, as his friend and confere, the President of the American Millers' Association, had stated. You may have noticed recently, that there had been a large contract from America for English steel rails, which quite justified the observation I have made in reference to the position of America. I believe there is a duty of something like sixty per cent on steel, and with all their protection in America they were able to come to the English market and buy a better quality at cheaper rate.

In reference to the flour trade England is peculiarly situated. We are the receivers of the whole surplus produce of all the grain producing countries in the world, whether America, India, Australia, Russia, Germany, Turkey or Hungary. The position of the English miller is, therefore, peculiar, as the various kinds of grain possess a different nature, and require different manipulation. He was thus ever changing, as one or other of these countries was favored with an abundant harvest or visited by a scanty one. Some seasons the English millers were inundated, as at present, by the American surplus of wheat, in consequence of a good American harvest, and this wheat required its own peculiar treatment. In other seasons, when America had not such a good harvest, English millers would manufacture their flour from the excess of Russian, Turkish, or Hungarian wheat. At another time they might be using, to a very large extent, the products of British India. They would also at another time be drawing a large supply from their Australian colonies, and in each of these cases a distinctive treatment and manipulation must be adopted. In consequence of this state of things English millers enjoy advantages possessed by no other flour-producing country—advantages which it is our duty to turn to the best account. There is one country which I have omitted to mention, and it is a country which I think will soon exercise a vast influence upon the English market, and it happens to be one of our own colonies, viz., Manitoba, in the extreme north-western States of North America. From Manitoba we shall be able to get wheat in larger quantities than we are receiving from the United States.

Milling in England might be said to be in its infancy, and the nature of the raw material to be converted by the manufacturer into the finished product ought to be thoroughly understood. With the physical properties of wheat every practical miller is, no doubt, more or less familiar, but it is to be feared that a great many would come off very badly were they subject to a moderately rigid examination with regard to its chemical composition. That is a subject to which we should devote a special study, because a due appreciation of the chemical composition of wheat is necessary to enable us to discover the best methods of converting it into flour. Hitherto there has been no attempt in England, as was made long ago in Paris, and more recently in Vienna, to establish standard samples of flour or rather an approximation to standard samples. Could nothing be done in this direction? That was a question well deserving the attention of the Council and of the Association. Regrettable though it may be for me to have to admit it, our manufacturers have hitherto proceeded more on the "rule of thumb" process. A scientific insight would soon solve the problem as to the best method of treating the grain, whether we are to have "high grinding," "half-high grinding," the American new process system, the Austrian roller system, or the

English "flat grinding" system. Whatever could be done by other millers, whatever quality could be produced by others, could be done and produced by England. We are not prepared to admit superiority in others. It is a question simply of the intelligent adaptation of means for the accomplishment of definitely proposed ends, and it would be a libel upon our understanding and enterprise to suppose that, with the ample means at our disposal, we are so incompetent in their use as to be unable to produce flour which shall be equal in all that constitute excellence to any producer in any part of the world.

New Zealand as a Field for Farming Emigrants.

(The following valuable information in relation to farming in New Zealand has been sent in reply to a series of questions addressed by the editor of the *Mark Lane Express* to Mr. John Simpson, now of St. John's College, Auckland, New Zealand.)

1. WOULD I ADVISE ANY ONE TO COME OUT HERE?—No; for two reasons. First, because I made up my mind before leaving the United Kingdom that I would never be the means of inducing any one to emigrate, whether relative or acquaintance, for fear of after-regrets. Second, as I intend returning myself, it would look rather out of place my advising others to do what I could not or would not do myself. Notwithstanding this, I will give the required information in the most unbiassed manner, and your friend may depend on its truthfulness as completely as if he was on the spot, and had personally collected the information, judging for himself accordingly.

2. DOES FARMING PAY WELL?—Evidently, by what I can hear from the working and gentlemen farmers about here, there is not much money to be accumulated by any branch of farming; but an industrious man with capital may acquire property, both in land and stock, which will enable him to live in comfort and independence, and be a valuable inheritance to his family years hence, when the population has quadrupled, which it will not take so very long to do. The great point in New Zealand is, that every man possessed of health, perseverance and industrious habits can have a home of his own, where he needs call no man master, and where he can have all the comforts of life, untrammelled by restrictions as to the working of his land, game laws, or any of the burdens or grievances of the old country. This very facility of obtaining a comfortable living to some extent retards the development of the country, as great numbers of people, when they find themselves in moderate comfort and independence, make no further efforts to improve their position.

3. MODES OF FARMING.—Small farmers possessing, say, from 50 to 150 acres, mostly keep a dairy, growing green oats and Indian corn, which can be had in succession all the year round, and does admirably instead of turnips or mangels, not only during the winter months, but during dry weather in summer when the pastures are burned up, a time when such a supply is actually of more importance than in winter. The produce is mostly made into cheese, for which an average of 7d per lb. is obtained. Near towns butter is made, for which during the spring and summer from 9d to 1s per pound is obtained, and in autumn and winter from 1s 4d to 1s 9d per lb. Such men have a field or two of wheat and a few acres of potatoes, the land being laid down again with clover and grasses, without manure of any kind during the course, and sometimes they take four, five, or six crops of wheat in succession from the same field. Over 200 acres, some of them have all sheep, keeping every acre in grass, and growing nothing that will involve labor, not even a field of meadow-hay. This is a bad system, and engenders lazy, idle habits; and the land being overcrowded with stock for the sake of a big clip of wool, soon becomes poisoned, and the young sheep are hard to bring through the rainy season, many dying, which are just left to rot where they fall—months after the deaths being quite able to be counted by the little heaps of bones scattered over the fields, showing very powerfully how labor is avoided in all countries where it is scarce and dear. Sheep-farming has paid badly this year, wool being so low—from 10d to 1s for washed, 7d to 8d for wool in the grease, and 6d per lb. for lambs' wool. Splendid lambs have been sold for 8s each—in fact, the very pick of the flock—running down to 2s 6d for middling and inferior. Larger farmers combine cattle and sheep farming, providing nothing for the winter but a field or two of hay to throw on the grass during the spring, or they may grow a field of oats and cut it green for hay, which makes splendid fodder. It is astonishing how little labor these men employ; on a thousand-acre farm there may be only two men, and

these almost continually on horseback, dashing about like the wind. They are splendid horsemen, quite as good as Mexicans, and with their long stockwhips, which they crack like a pistol, they almost take a bit out of the hide of a refractory bullock. A neighbor of ours, Mr. William Taylor, owns 12,000 acres in fee; what you would call his home farm being here, and consisting of 1,000 acres, carrying 2,500 sheep and a lot of cattle and horses, and the remainder in the valley of the Waikato, about sixty miles from Auckland. All this property is managed by himself and sons, the latter being splendid horsemen, and fashionable gentlemen as well. Mr. Taylor, although a very wealthy man, and a director of the Bank of New Zealand (you can see his name in the *Times* any day), says this vast property makes very little money, but will become exceedingly valuable by extension of the railway system. He feeds splendid bullocks—three-quarter bred short-horns and pure Herefords—and these animals, weighing 8 cwt. each, make only about £12 on the average. He sold great numbers of sheep this summer, after clipping, to the boiling down establishment, at 2s each, and many of them were very good animals; but for cast ewes, no matter how good, their unavoidable fate is to be melted down.

4. GETTING A FARM.—There is no difficulty in getting a farm almost anywhere, but really good land is not often in the market, and must be waited for and watched, as 50 acres of real good volcanic land is better than 500 middling scoria, or indifferent clay. The farmer whom I have already mentioned as having had on a pet field 55 bushels of wheat per acre, would not part with his farm, which is his own property, at £50 per statute acre, and he has 63 acres or thereabouts. Six pounds an acre is about the lowest price for which land worth having can be obtained, and it will not be all cleared at that; but there may be a house on it, some offices, and a few fenced fields about the house. Ten pounds an acre will buy fair feeding land, and by chance all might be cleared and fenced at that price, but not often, although the whole money down, to a needy man, sometimes secures a bargain. A farm of 463 acres was bought the other day by a Scotchman I know at £15 an acre, and is considered worth the money, although no particular bargain, one-fourth in cash, and the remainder on mortgage at 7 per cent, which is easier than bank terms, but is still a considerable burden. I have clipped out the advertisement of this farm, which will show you how such things are described. I may mention that this very Scotchman incautiously went too far into the country last year, in his anxiety to settle, and was driven off by the Maories, after ploughing and laying down to grass and clover 80 acres. He got about 600 acres very cheap, and had paid an installment, but the man who sold could not give a good title, and hence the interference of the Maories, from whom it had been bought honestly enough; but the deeds were imperfectly signed, a common defect with the Aborigines, and as they almost always regret parting with their land, if there is a flaw they are sure to take advantage of it.

5. BEST PART OF THE ISLAND.—The province of Auckland alone contains 17½ million acres, and, possessing a magnificent climate, is decidedly the favorite with those who can afford to choose a particular locality. The whole island is very well described by comparison thus: North Auckland, say from Whangarei and the Bay of Islands to Cape Maria, is like Spain; South Auckland, comprising the Waikato, Piak, Tamanga, and Poverty Bay, France; south of the North Island, and north of the South Island, England; and Otago and Westland very fairly represents the climate of Scotland, as it has frost and snow enough to please any Aberdonian. In any part of either island farms can be had in abundance of all sizes, and if a man wants a larger place than he has money to pay for, he can always borrow on mortgage, by paying one-half, three-fourths, or a fourth in cash. In stocking but little money is required, as will be seen by the prices quoted; but even in this, money or stock will be gladly advanced by salesmen and commission agents, who have the banks at their back, and are only too glad to be asked; but for all that, happy is the man who keeps out of debt, although, at the same time, it is perfectly consistent with good management to borrow a reasonable sum. Land is got on lease occasionally; but the practice of hiring land is as yet the exception, and not the rule, some of the best farmers I know being men paying a large rent, however, and their practice, in having wheat and potatoes in large quantity, and using bone dust, is an example to the districts where they live.

6. CLIMATE.—In the North Island simply delicious, particularly north of Lake Taupo, but all exceedingly healthy for Europeans, and cattle can live out throughout the winter and do well.

7. SAFETY OF LIFE AND PROPERTY.—Not more so in the world, and there being little or no real poverty, and a living easily made, there is little temptation to plunder, and the population is as yet too small scattered to contain or hide disreputable characters, and the law is also well administered, by a splendid body of police and resident magistrate in each district. With regard to the natives, they are very quiet people about Auckland, working for the farmers, fishing, and selling fruit, fowls, fish and mushrooms about the town, in the quietest and most unobtrusive manner possible. I speak from experience in this as well as in everything I have already said, as we live near the native settlement of "Oraker," a splendid block of land adjoining the Pacific, which they could never be got to part with, and are hemmed in by the whites. These people live mostly on pork, potatoes, sharks (which they catch in great numbers), and a kind of shell-fish called "pi-pis," which they collect in immense quantity, wash the shells clean of sand, then cook until the shells open, take out the contents, and string them on threads of the native flax, hang them on the fences to dry, when they keep good for months. There is a pi-pi bank just under our house, where a party of men and women often come, and remain a week or ten day, working most industriously between the tides, and sleeping round the oven, which is a deep hole in the ground, heaped up with pebbles which are made red hot by a fire at the bottom, covered with bags, and sand heaped over all, so that no heat is dissipated or lost. This is an admirable oven, and fish, pork, potatoes, and herbs, such as tender thistles and fern-roots, are cooked by it in the most delicious manner, the flavor of the different articles being thoroughly incorporated by the confined steam. The ground all round is well warmed by such a huge fire continually going for the preparation of the pi-pis, and the whole company of men, women and children, when night comes, just roll themselves up in a blanket, and in a circle, with their feet to the fire, sleep the sleep of the just, until the returning tide calls them again to their labors. The only inconvenience their presence creates with us is their borrowing habits, the women borrowing tea, sugar, bread and wearing apparel, and the men a boat mostly, these things being a great temptation to them. When it becomes tiresome, however, and they are refused a couple of times, they cease coming, and altogether they conduct themselves in the most good-humored manner. In the interior they are sterner, and possess more of the nature of the savage than those who are living surrounded by white men; and no stranger to the country should ever think of settling amongst them, or of buying land direct, as he is sure to be the loser, as I have already given you an instance. There is no necessity for doing so, as Government negotiates the purchase of native lands in immense blocks, taking plenty of time (even years) to get all the tribal signatures, and then selling in suitable sections to the settlers, giving a Government title, which can never be gainsaid or annulled; so that any man trying to purchase a farm from the natives direct is a fool for his pains, and pays dearly for his greed or silliness. They are anxious enough for the money, but when that's received do not like to part with the land, and after a few months bring forward a few families of the same tribe, who, they assert, had an equal claim, and either require more money or instant resignation of all claim; and, being the strongest party up there, they are not slow to enforce their demand, driving off all stock on the instant as a preliminary to what is to follow; and 40 or 50 tattooed men, with no dress on save a shawl or half blanket strapped round their loins, coming across a man's fields with hostile intentions, are no bad inducement to cut and run. To sum up this query, the native element in New Zealand is no hindrance to the safety or prosperity of the white man, and need deter no man from coming, a fact of which one finds the truth almost the instant he steps on shore, as the first thing that catches his eye is groups of tattooed men and women sitting on the wharfs, steps of hotels and public buildings, or on the pavement, smoking, laughing, chatting in Maori, eating pumpkins and melons, or offering such things for sale, and he sees instinctively that the day of danger from these people is past; accepting the fact on the instant by his own judgment.

8. KIND OF BUSINESS.—Undoubtedly a man possessing a trade, such as builder, engineer,

carpenter, draper, or grocer, and £2,000, can do well; but to enter on any trade in New Zealand, or embark in any unknown business, means bankruptcy sure and certain. Rents are terribly high, a country hotel even, of any standing, commanding a rent of from £12 to £15 a week; and a hotel in Auckland the other day, the United Service, was let at £12 a week for 21 years, £3,700 in cash, and the tenant to build a large wing at his own expense, which he has now got nearly finished. If a farmer, a farm is the only opening which affords him security for his capital, and he must, wages being so high and worth a man's while saving, lend a hand at all operations himself, and make his family do the same, or he will scarcely succeed; and it really pays well to do so, and in a new country it is no lowering of caste to do it, and is much pleasanter than most people suppose, and when a man and his family, by doing their own work, can save the price of two or three men and women servants, perhaps amounting to £5 a week, the fatigue of labor is forgotten. At 5 per cent, the interest given by the banks, a man's money is fructifying while he is looking about; and, above all things, he should be in no hurry settling till he knows the country, and can, to a great extent, judge for himself.

CONCLUSION.—New Zealand is a country people soon get fond of, on account of its splendid climate, the abundance and cheapness of the necessities of life, and the feeling of security, comfort, and independence which seems to float in the air, and becomes part and parcel of a man's spirit almost at once—at least, as soon as the home-sickness wears off, and he can look about him. Few people care about returning to the old country for good after having established themselves comfortably here, and most of those who do so return again, finding life insupportable in the old country, friends probably being dispersed, and their very modes of thinking changed. Most people, however, are very fond of taking a trip for a year or so to the land of their birth, finding pleasure, I dare say, as much as any thing, in showing their children the old and familiar scenes, and introducing them to relatives and old friends, and the young people themselves are mad to see the land they have heard so much of, and nearly every ship and mail carries away a number of passengers of this kind, many of them substantial and well-to-do now, and who a very few years ago left home very humble people indeed. The people about here wonder that I myself should ever think of going back to a country where poverty and want cannot be kept out of sight even of the palace, where independence is an humble man is simple impertinence, and where a living has actually to be struggled for; to say nothing of the severity of the winter; a thing unknown up here, frost being seldom ever seen, snow never, unless on the tops of very high mountains. They say if I do go I am almost certain to return amongst them again, but they also say that if I remain two years or so longer, I will laugh at my folly in ever thinking of leaving such a beautiful country, where life, aided by the bounteous gift of nature, both by salubrious climate and fertile soil, is thoroughly enjoyable.

TO RID THE MILL OF DUST.—The stones should be surrounded as completely as possible by a movable covering of wood or sheet-iron, which should have no opening in front, but what is absolutely necessary for the work. In order to avoid the choking up of the ventilating pipes, it is necessary to provide special discharge pipes for the water, according as the stones are partly below or entire above the floor. Again, the passengers intended for carrying the dust should be placed underneath the stone, and beyond the point where the work is applied, regarding the direction of motion; it should have a breadth a little greater than that of the stone, and a depth of eight inches at most, for the largest stones, a sliding door serving to close it whenever dry dust is not produced. The water discharge pipe should also have a valve, which may be closed when water is not used, and when it is desired to carry off the dust produced when the stone is trued. If there are only four or five stones in the work, a single collecting pipe will suffice, and the blower should be placed at the end; but if there are eight or ten stones in one line, a second collector, sixteen inches by twelve, may be placed in the middle of the length of the first, and perpendicular to its direction. If, too, there are two long parallel rows, with eight or ten stones in each, they should be connected with the second collector, or with a third, 16x20 inches, communicating with the ventilator.

Minnesota Millers.

In answer to the special call recently made, the Minnesota Millers, in fair numbers, met at the Nicollet House, Minneapolis, July 1st, W. P. Brown, President, and F. S. Hinkle acted as Secretary. C. O. Washburn in his remarks said he had no doubt but that the sub-Executive Committee of the National Association had acted in good faith. J. A. Christian explained the proceedings of the committee in effecting the compromise. He reviewed the interviews with the representatives of the Barker, Downton and Denchfield patents. The Barker patent, represented by Judge Hill, was decided to be worthless and so was the Denchfield patent, and the committee determined to fight them. The agreement, as Mr. Christian understood it, with the Downton folks was that the millers should pay a scale of royalties when Mr. Downton obtained a decision in his favor, in the United States Supreme Court, but he noticed that it had been changed and published that the royalties were to be paid when a decision was obtained in Circuit Court instead of Supreme Court. The Smith brush patents were considered by the committee as the only ones which were indefensible, and acting on the advice of an attorney, Hon. George Harding, they settled with the Consolidated Company, and thereby evaded a large amount of litigation.

Mr. Washburn asked whether Mr. Harding was retained by Downton. Mr. Christian answered that he believed some such arrangements had been made both with Downton and the Consolidated Company, and that Harding had promised the latter, in case the settlement with the millers was made, to help strengthen their title to the brush.

Mr. Cahill called attention to the circulars sent out by the Executive Committee, which he thought were calculated and intended to intimidate the millers.

Mr. Williams wanted a little information about whether the association were still going to contest the Cochrane patents in the Supreme Court.

Mr. Cahill said that the last circular issued by Secretary Seamans was merely an advertisement for the Smith machines. It looks as though the committee had gone in "cahoots" with the Consolidated Company.

Gov. Washburn said he did not like the looks of the thing. He didn't impugn the motives of the Executive Committee or charge collusion of Mr. Harding, but he would have preferred that he had not accepted a retainer from one party and suggested acceptance from another. In speaking of the brush, Mr. Washburn said that he thought there was no doubt that the first automatic brush was put on by George T. Smith in his B mill. He thought there was no doubt that he got his idea from La Croix.

He did not believe, first that Geo. T. Smith invented the brush, or second, that if he did invent it, it was a patentable thing. If the Smith patents were valid, then there was no use fighting them, and the sooner the millers settled with them the better it would be. He did not believe the Smith claim to the brush was good. It was a fraud and was in the hands of the very ring of scoundrels they had been fighting all along, and he did not feel like surrendering to a gang of rascals who had been defeated at St. Louis and then came to Chicago under another guise and effected a compromise. He had 50 machines and he did not propose to pay a cent of royalty until he was forced to do so by the Courts. As to the Downton patent, according to Mr. Christian, there had been an imposition practiced upon the committee in the substitution of the Circuit Court for Supreme Court. He thought that if the association did not fight it, Mr. Downton would on an *ex parte* hearing get a decision in his favor and then the outsiders would not be liable to any more damages than the royalties to be paid by the members of the association. He didn't believe he had the slightest right for that process. It has been used for twenty-five years, and every one knows that in the use of rolls, the effect is to get out the germ. Under these circumstances his claim that he has a process for getting out the germ is perfectly absurd. He said Mr. E. P. Allis had a perfect assignment from Downton.

President Brown then said he had just received two communications from Mr. Allis, which, if Mr. Washburn would give place for a moment, the Secretary would read. The Secretary then read the explanation of the Downton-Yaeger suit at St. Louis, concerning which there has been so much dispute, as furnished by Messrs. E. P. Allis & Co., which has already been published in the *UNITED*

STATES MILLER. A rambling description was then entered into which proceeded to considerable length about different patents. Gordon E. Cole, attorney of the Minnesota Association, being called upon, made some remarks in which he advised the payment of the \$25 royalty for the use of Smith's brush.

To test the sense of the meeting Mr. Cahill moved that the Minnesota Millers' Association defend any member of this association against any suit brought by the Geo. T. Smith, or Consolidated Purifier Company, against them for use of brush, or any other device claimed by that company. Mr. Fletcher wanted to know whether it would be considered bad faith to aid the fight and at the same time pay the \$25 for each purifier.

Mr. Baker submitted the following as a substitute for Mr. Cahill's motion:

Resolved, That this State Executive Committee are hereby instructed to contest all suits brought against members of this association for infringements on purifier patents, except the Geo. T. Smith patents on the combination of air blasts or suction with vibrating sieve and brush.

Mr. Pettit thought that it would be impolitic to instruct the Executive Committee to defend all suits, as there might some suits arise which no one would want defended.

Mr. Baker changed his substitute by adding the words "if in their opinion such patents are invalid." The substitute was put to a vote and lost.

Mr. Fletcher moved as an amendment:

Resolved, That any member of the State Association may have the privilege of settling with the Consolidated Middlings Purifier Company on the basis as recommended by the Executive Committee of the National Association at Chicago, and not be considered as acting in bad faith, provided said parties pay such assessments as are levied by the association.

The motion to amend was lost.

The question recurred on the original motion by Mr. Cahill.

Mr. Pettit thought that after having expressed so much faith in the good intentions of the Executive Committee, and having submitted great matters to their judgment, it did not look well and was not just to them to repudiate their action the first time their judgment was contrary to the feelings of the association. He thought that the State Association, having become part of the National Association, ought to abide by the action of the National Association. It would be both unjust and unreasonable and unwise to do otherwise.

Mr. Brown thought that after the members of various other State Associations had endorsed the action of the Executive Committee at Chicago, it would throw the greatest fire-brand into the camp of the National Association and please the Cochrane folks better than anything else to take the action proposed by Mr. Cahill.

Mr. Cahill submitted his motion in a little different form in the shape of the following resolution:

Resolved, That the State Millers' Association defend any member of said association against any suit brought by the Consolidated Middlings Purifier Company against them for the use of the brush on middlings machines.

Mr. Washburn moved the reconsideration of Mr. Fletcher's amendment, and it was adopted.

Mr. Cahill's resolution was then submitted and voted upon.

Upon demand by Mr. Christian the ayes and noes were ordered.

Mr. McClure said that he proposed to stand by the State Association, but he thought the time had passed when the State Association could afford to stand in opposition to the National Association, and that it would be a mistake on the part of the State Association to have a side fight.

The call of ayes and noes being made, resulted as follows:

Ayes—Messrs. Dunwoody, Cahill, Crosswell, Hinkle, Syme, Officer, Loring, Washburn and Fletcher—9.

Noes—Messrs. Hobart, Pettit, Rollins, Day, Hinesline, Espenscheid, Kimball, Taylor, Seebach, Barber, Goodrich, Holmes, Crocker, J. A. Christian, Baker, Gregg, Bronson, Sprague, Ortman, Walcott Mill Co., White, Williams, Green, McClure and Brown—25.

Mr. Cahill's motion was thus lost, it being the evident determination of the great majority of the members to stand by the action of their representatives at the Chicago convention.

Upon motion by Mr. Baker the convention then adjourned *sine die*. And thus ended the rebellion.

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Milling and Baking in Pompeii.

In the excavations made at Pompeii,—that remarkable city covered by the great eruption of Vesuvius, A. D., 79,—some very interesting discoveries were made of the modes of milling and baking employed by the people of that city and of that day. A large bakery occupying an entire house was unearthed in the streets of the Herculaneum. The inner court was occupied by four mills. These crude mills consisted simply in huge stones, set one upon another, in appearance much like a large hour-glass. The lower stone remained firm while the upper was revolved by means of an apparatus kept in motion by a man or a donkey.

Slaves were often sent to the mill, sometimes having their eyes put out as a punishment for misbehavior. Occasionally persons of good position, hired out to millers and performed this work to earn money to spend in the gratification of their dissipated habits.

The primitive Romans made their bread in their own houses. Rome was already nearly five hundred years old when the first bakers established mills, to which the proprietors sent their grain, as they still do in the Neapolitan provinces; in return they got loaves of bread, that is to say, their material ground, kneaded and baked. The Pompeian establishment which we described was one of these complete bakeries. One can still recognize the troughs that served for the manipulation of the bread, and the oven, the arch of which is intact, with the cavity that retained the ashes, the vase for water to besprinkle the crust and make it shiny, and finally, the triple-flued pipe that carried off the smoke—an excellent system revealed by the Pompeian excavations and successfully imitated since. The bake-oven opened upon two small rooms by two apertures. The loaves went in at one of these in dough, and came out of the other baked. The whole thing is in such a perfect state of preservation that one might be tempted to employ these old bricks that have not been used for eighteen centuries for the same purpose—the very loaves have survived. In the bakery of which we speak, several were found with the stamp upon them, "*Siligo grani*" (wheat flour), or "*e cicera*" (of bean flour), a wise precaution against the bad faith of dealers.

Still more recently, in the latest excavations, Signor Florelli, the Government engineer, came across an oven so hermetically sealed that there was not a particle of ashes in it, and there were eighty-one loaves, a little sad, to be sure, but whole, hard and black, found in the order in which they had been placed at the time of the destruction of the city. Enchanted with this windfall, Florelli himself climbed into the oven and took out the precious relics with his own hands. Most of the loaves weighed about a pound, the heaviest a little more. They were round, depressed in the center, raised on the edges, and divided into eight lobes. Loaves are still made in Sicily exactly like them.

AN ELECTRIC STONE DRESSER.—Mr. J. G. Cranston, engineer, Newcastle, England, whose name is favorably known in connection with rock drills, air compressors, and coal-cutters, has just invented a machine which is worked by a dynamo-electric machine, and which he claims will dress mill-stones or other stone, and drill rock economically, with rapidity, precision and dispatch. The invention, which we have seen at work is an ingenious one, and, judging from the trials of it that have been made, it promises to meet with considerable success. The chisel employed is fastened to a spring arm, which protrudes from a case containing magnets and armatures. This spring arm when the magnets are connected with the dynamo-electric machine, moves up and down with extreme rapidity, causing the chisel to strike a blow at each descent. The inventor states that it can be made to strike from one to two thousand blows per minute. Wires being used instead of steam pipes, enables the apparatus to be moved readily to any angle, or worked at any reasonable distance without much loss of power; while not the least meritorious portion of the whole invention is the horizontal frame or base to which the electric apparatus is fixed. This frame is portable, and by the use of screws can be so adjusted as to cause the chisel to strike any portion of a circle with either a swift or slow motion, the number and intensity of the blows being regulated according to the softness or hardness of the stone. By the use of this machine, Mr. Cranston claims that he can cover a mill-stone in a very short space of time with the necessary grooves and furrows having the straightness, regularity, and parallelism so much desired in good mill-stone dressing. It remains to be stated that the apparatus can be worked either automatically or by hand, so as to suit the varying natures of the stone being operated upon.

Pennsylvania Millers.

SEMI-ANNUAL MEETING AT ALTOONA, JULY 8TH.

The State Millers' Association of Pennsylvania met in semi-annual convention in the parlors of the Logan House Altoona, July 8th. About half-past 2 o'clock Secretary A. Z. Schoch, of Selinsgrove, Pa., called the meeting to order in the absence of Mr. Miner, the President, and Mr. W. P. Duncan, of Bellefonte, of the firm of Duncan, Hale & Co., was elected President pro tem. After a few appropriate remarks by Mr. Duncan, the minutes of the previous meeting were read—the reports of committees contained in them being omitted—and they were adopted as read.

Reading of the reports of officers was the next business in order. The President pro tem stated that as he had not expected to be called to the Chair there would be no report from the President as he had none prepared.

The report of the Secretary was then read by that officer as follows:

Mr. President and Gentlemen: During the interval of six months little of general interest has occurred within our organization to communicate to you. We have added since our last report thirty-one names to our roll, making our membership eighty-seven to date. This membership should, however, not be accepted as an indication of the success or usefulness of our organization, as we believe it is generally admitted that a decided interest has been awakened to improve the industry in which we are engaged, besides cultivating the amenities of the trade. Millers generally are becoming educated to the fact that many old ideas and methods, good in their time, must be abandoned and the improved modern appliances and principles substituted. The most serious obstacles in the way of the speedy improvement of our mills and methods with which we have to contend, are the numerous patent claims which have been made upon all kinds of mill machinery, so conflicting and complicated that the just and fraudulent ones cannot be distinguished, preventing the purchase of many reliable machines because of these indefinite claims.

The Millers' National Association has to some extent endeavored to correct this evil, and has lately triumphantly succeeded in the signal defeat of that formidable organization the so-called Cochrane ring, the particulars of which are familiar to you all. The incalculable benefits of that expensive and laborious litigation all now enjoy, but to accomplish which too few contributed material aid. In view of the fact that the comparatively few have been obliged to defray the expenses which all alike should share, it is not surprising that the National Association has determined to look after the interests of her own members only, fixing a time after which those who persistently remain outside must take care of themselves. The important subject will doubtless be fully presented to you by your committee.

At our last meeting at Lancaster (as you have heard from the minutes) a resolution was passed in substance: "That members of this Association using middlings purifiers subscribe and pay to the National Millers' Association ten dollars (\$10) per run of stone as an admission fee into that society." This action we communicated to the Executive Committee of the National Association, who, upon consideration, declined to accept our proposition, assigning as their reason for the refusal, "That as members alike share the advantages, so all should equally bear the burdens of the organization," thus fixing the terms of the membership at \$25 per run, the sum previously assessed and paid by old members. Upon these conditions thirty-four run were subscribed by members of this Association previous to March 1, which number, together with fourteen run not members of this Association, make the total representation of State on that date only forty-eight run. We hope this number will be largely increased before the 15th instant, to secure the advantages named, and for the reasons assigned in the late circular on the subject issued by the National Association, which you have, no doubt, all received and considered, and are now prepared to act promptly.

In conclusion permit me to congratulate you upon the pleasing outlook for a successful business year for the miller. While the general business depression has severely affected our industry, yet we have not, like many others, been seriously embarrassed, and now with the general revival of all branches of industry of which we have assurances on every hand, together with the bounteous crops all over our land, betoken for us plenty to keep us employed—a good demand for our product at remunerative prices, if we but learn, as should be our constant aim, to do our work well. Respectfully yours,

A. Z. SCHOCH, Secretary.

The calling of the roll followed, showing forty-seven members of the Association present. Then came the enrollment of new members, and sixteen persons advanced to the Secretary's table and paid the required membership fee of \$3.

Reports of committees were next in order, and the first report read was that of the Committee on Patents:

Your committee have the satisfaction of reporting the termination, since our last meeting, of the great St. Louis middlings purifier suit, which all millers watched with so much interest. It was decided in favor of the mill-

ers. Individual members of this society lent their aid to break up this ring, but the society proper made no contribution. The patent claimed on air blast for purifying middlings has fallen to the ground. Your committee think this decision as important an event in the history of milling as was the introduction of the purifier into practical milling.

The patent on the "traveling brush" to clean the sieves of the purifier is now claimed by a number of parties. Millers should be cautious about using the brush, unless the use of the patent can be guaranteed to them by responsible parties. The contract with the George T. Smith party, made by the National Association at Chicago, is the best evidence we can get of the opinion of that body as to the ownership of the patent. Your committee are of the opinion that an "automatic traveling" brush will soon be attached to all purifiers, and that a purifier is incomplete without it, or some other device, to keep the cloth free and unclogged.

Your committee could enumerate other patents in suit which are of less importance. They again caution millers against buying patent machinery from irresponsible parties. New milling devices are daily patented, and what a miller can buy with safety is as important a question as what will pay him to buy.

W. LATIMER SMALL,
NATHAN SELLERS,
GEORGE M. CRESSWELL,
JACOB WATTER.

The report was discussed at some length and was followed by the report of the Insurance Committee, read by President Duncan:

To the President and Members of the Pennsylvania Millers' Association:

GENTLEMEN: Since the meeting of our Association at Reading, one year ago, at which time your Committee submitted a report, we have nothing of special importance to report excepting to reiterate what was said at that time. No doubt many of our members will remember that we urged the importance of taking steps for the formation of a Millers' Mutual Insurance Company for the State of Pennsylvania. The milling interests of the State being large and important and the amount of capital invested in mill property being very large, we think an insurance company organized on the mutual plan would save the millers a very large sum of money every year. Of course mutual companies, like all others, if not properly managed would not be profitable, but your Committee has no doubt a company could be organized and conducted on strictly business principles, that would make very large returns to the insured in the saving of premiums. The experience of your Committee has been that mill property is not specially hazardous, as claimed by most companies; that is, mill property in Pennsylvania. If any member of this Association will make a calculation of the mill property destroyed by fire in his own immediate neighborhood, or county, for a period of say ten or fifteen years, we think the small percentage of loss will surprise him. The Chairman of this Committee made an estimate of the losses on mill property in his own county, about one year ago, and was surprised to find that the loss, covering a period of fifteen years, did not reach two per cent, and he is confident that the losses paid by insurance companies in the same county, in the past ten years, have not been two per cent of the amount of insurance on this kind of property. Now good companies charge on the very best class of water mills about two per cent per annum. Now it occurs to us that this rate is extravagantly high. There may be other States in which the percentage of loss is higher, but we honestly believe that there is no class of property more desirable for insurance companies than mill property in the State of Pennsylvania, or none that pays the companies larger profits. Now the question arises, how are we to remedy the existing order of things and have our premiums reduced. Your Committee think the only true plan is to organize a company on the mutual plan, whose business shall be confined to this State. The Chairman of your Committee has had some correspondence with the Secretary of the Boston Manufacturers' Mutual Fire Insurance Company and learns that the average cost of insurance in their company during a period of twenty-five years has only been about one-third of one per cent per annum. Their business is mostly confined to cotton and woolen mills, which we should think would be more hazardous than flour mills. Much more could be said on this subject, but your Committee only expect to open the way for discussion, and hope the subject will be fully discussed by the members of the Association.

The President thought a great deal more money was spent at present by the millers for insurance than was warranted by the percentage of loss. If a mutual company could be organized he believed insurances could be effected at a very material reduction to millers. He hoped the report would be thoroughly discussed.

Mr. Frank Hayes, of Lock Haven, said that seventy-five firms were represented in the State Millers' Association, and with this number an Insurance Company could be started with risks of \$200,000. Even if each miller took but \$2,000 of insurance that would make a basis of \$150,000.

President Duncan was of the opinion that the maximum risk to be taken by a new Mutual Company should be \$2,000, as an Association just forming could not afford to assume very large risks.

After further discussion by Messrs. Hayes, Bare and Ellsworth, a motion to put a question to ascertain how much insurance each miller would take in a new company was carried.

Mr. Hawbecker's was the first name called, and that gentleman rose and said he did not wish to enter this agreement blindly. He would join a Mutual Company, but as he carried \$5,500 of insurance he did not wish to be limited to \$3,000, according to the terms of the new Association. He wished to know, therefore, if millers would be prevented from effecting insurances with other companies.

President Duncan in reply said that millers insured in the mutual society would not be debarred from going into other companies if the insurance they carried were higher than the Mutual Company wished to take.

Some further debate ensued and then Mr. Hawbecker said he would take \$2,500 in the Mutual Company, and a call of the meeting showed that the company could commence with \$88,000 of insurance, although the test was not a fair one on account of the absence of so many members who were known to be willing to join in the enterprise.

A delegate stated that no Insurance Company could be organized with less than \$100,000 assured.

Mr. Hayes moved that the Insurance Committee be authorized to take steps to organize the Insurance Company and report at the next meeting.

A delegate insisted that \$100,000 must be subscribed and guaranteed before a charter of incorporation could be obtained.

During the continuation of the discussion it was mentioned in reply to a suggestion to that effect that a temporary organization could not be effected at this time, because all the members were not present, although Mr. Isenberg thought that the matter should proceed to the election of a President, Board of Directors, etc., merely as a matter of form to get the company started. Other members agreed with Mr. Isenberg's suggestion, but as no headway seemed to be made it was intimated that it would be well to postpone consideration of the question to another meeting, or that it might be put in shape at the evening session.

Mr. Ellsworth insisted that the question be referred to the Insurance Committee, they to have everything in readiness to effect an organization in a very short time at the next semi-annual meeting.

The motion of Mr. Hayes that the Insurance Committee take steps to organize and report at the next meeting, was then passed.

The report of the Committee on Transportation being called for, Mr. E. H. Hanscock, of Wilkesbarre, Chairman of the Committee, said he had no written report prepared, as little or nothing had been done since the last meeting to further the interests of the Association looking to low freights, as the railroad companies' rates had fluctuated so greatly, and had been put at a ruinously low figure by the companies themselves.

Mr. Isett, of Spruce Creek, thought the question of freights had not been done justice, and said that the Pennsylvania Railroad Company had been unjust to the millers in their rates of freight to certain points that he named.

Mr. Ellsworth also complained of unfairness in the freight charges, and until some other and better arrangements were made the millers of Pennsylvania would be unable to compete with those of the East and West.

Another delegate believed that it would be useless to consume time in this discussion. Unless the millers could command capital enough to build a line of railway from Philadelphia to Pittsburgh in opposition to the Pennsylvania road, or to go into the Legislature and compel that body to devise measures that would give them relief and justice, further discussion was of no consequence.

A member remarked that there was no hope for the millers in the Legislature, as the members of that body were all controlled by either the Pennsylvania or Reading railroads. However, if the millers chose to combine for the purpose they would be strong enough in their united power to compel some satisfactory terms. He thought the combination against them could be broken if the millers would but put their shoulders to the wheel and push with all their might.

After some further remarks were made it was decided to defer discussions until the evening session.

The following report on mill machinery and processes was then read by the Chairman of the Committee, Thomas Wright, of Kingston, Pa.:

To the President and Gentlemen of the Millers' State Association:

It was believed that the interests of this Association would be better served by an interchange of ideas and experience among its members than by a written report. As a gentleman of large experience recently expressed, "I have milled for twenty-five years, and my experience has included some of the best mills in the United States; I have endeavored by study to acquire all the knowledge possible, yet what I do not know about milling would fill a large volume." This doubtless would be true of this Committee. A large amount of the present knowledge of milling is experimental, and as these experiments have all cost the experimenter something, it is not more than right that he should receive some recompense. This, in this Association, it is to be hoped he will receive in a measure from the experience of others. It has been suggested that the National Association build an experimental mill in which experiments which promise good results might be tried at the common expense, and for the common benefit. This, if practicable, might be the cheaper way.

The publication in the English language of a thoroughly practical work on milling that would contain so far as possible a complete history of the various processes now in use and also a history of the most interesting of the experiments that have led to these results would doubtless be a source of profit to the author and would receive the hearty support of all progressive millers. The milling interests of this State are largely of a local character and composed mostly of small mills, but the owners of these small mills should be encouraged by the fact that as fine a grade of flour has been produced in small mills as in the larger ones, and in many instances at relatively as good a profit.

In the first step of cleaning the grain there are those who advocate the use of the ending stone; but the majority are of the opinion that the best results are obtained by a thorough cleaning and polishing of the berry, removing the fuzz by giving as much end scouring with as little side scouring as possible. What machines will best accomplish this (leaving the bran in tact) will be left to the judgment of the miller, as it would not be within the province of this report; but it is thought that the rubbing of the wheat against itself with a final brushing will accomplish the desired result.

In the process of grinding it will probably be some time before millers in general will substitute any other device for mill-stones, and much has and much more will be done to bring them to perfection. Stones now in use can be fitted with adjustable drivers, of which a number are before the public—the more sensitive the better the result. Over grinding can in a measure be prevented by enlarging the eye so that the material be quickly disposed of. The stiff spindle is giving excellent results when applied to small mills, but there seems to be certain mechanical difficulties in the way of its application to large mills. In regard to rollers, their use promises to become as general as that of the purifier, but in the most mills we think will be restricted to the removal of the germ and fine branny particles by flattening them.

The gradual reduction system for obvious reasons will be practiced in this State by but few. The nature of the wheat mostly ground well, we think, give the most generally satisfactory result of grinding high enough not to injure the germ, then remove the germ by flattening between rollers, purify and reduce these middlings on mill-stones. For this purpose the stiff runner is perhaps preferable. For cleaning the bran there are several machines which seem to promise better results than stones, as they remove most of the adhering particles in the form of middlings. In regard to bolting and purifying, the committee have little to add to their former report.

We would suggest that the possession of a good microscope, a set of small sieves, and a delicate scale, weighing say one pound by decimal division to one thousandth, would be of incalculable service to the miller. The scales can be procured of Brown & Sharp, Providence, R. I., and the sieves and microscope of almost any dealer in mill supplies. Armed with these simple appliances the miller can intelligently determine what proportions he is making in his products and the nature of each, and will develop a spirit of inquiry that cannot help but result in good.

The above report was received without discussion, and the committee on grain for milling asked leave to submit the following, which was read by Mr. Levan, of Lancaster, the Chairman:

The proper kind of grain for milling is of the greatest importance to the miller. Improved machinery and methods will of course remedy to some extent the defective qualities of the inferior wheats, but where the variety does not contain any good properties, all the machinery and methods obtainable cannot produce the desired result. In this State the Fultz variety is the principal "thorn in the miller's side," and is partly the cause of the low standard of Pennsylvania flour. Clawson wheat is also grown to some extent, but should not be recognized by millers as fit for flouring. We consider it of the utmost importance to millers to make it a special object to supply the farmers in their respective localities with the best seed wheat and at as low a price as possible. This can be done by united effort. Those in whose sections the proper kind or variety is raised can make it known, and supply others in localities where it is wanted. The Fultz wheat is grown most extensively throughout our State because of its good yield to the farmers, but, as before stated, it has been the

cause of much trouble to the millers. Dampening or heating no doubt improves it, and there are some of the fraternity who even advocated it at our last meeting. We think, however, that the resolution passed at that meeting covers the ground completely.

S. L. LEVAN.
J. F. NEWMAN.
H. M. GARNER.

There was an animated discussion upon the reading of the above as to the kind of wheat millers should endeavor to have farmers supplied with in order that better brands of flour may be manufactured by millers, and as to how the grades of wheat could be improved.

Mr. Pyle, of Bryn Mawr, was of the opinion that if one miller could make good flour from a certain kind of wheat there was no reason why another miller should not have the same success with the same kind. He believed this end could be attained if there were some uniform system of milling adopted. Mr. Pyle argued strongly in favor of the superiority of the Fultz wheat, and when he sat down his argument was supported by many others, who said that, in view of the fact that there was a serious opposition to the Fultz, it would not be policy to condemn that grain at this time.

A number of other delegates would not be persuaded, however, and denied that the Fultz is a good grain, stating in fact, that it is not worth anything at all.

The discussion was continued pro and con for a while, and at its close the report of the Committee on Inspection and Grading of Grain was read by Mr. Hawbecker, the Chairman of the Committee:

Mr. President and Gentlemen of the Millers' Association of the State of Pennsylvania:

We, the committee appointed to report upon the inspection and grading of grain, submit the following: First, that as the grading and inspection of grain is simply practiced in the city of Philadelphia, and there it is simply controlled by a municipal law. So far as the knowledge of your Committee reaches, we are not governed by any State or municipal law in this commonwealth outside of the city of Philadelphia. We, therefore, can only say to the association on this subject that every miller engaged in the business of manufacturing flour is governed and controlled by one common law, and that is common sense. Every miller should know that it is prudent for him, in order to make his business of manufacturing flour a financial success, that he should thoroughly educate himself in the matter of grading and inspecting wheat. The experience of every miller is that in purchasing an inferior quality of wheat he can only produce an inferior quality of flour, which will always prove fatal to his flour trade. We therefore repeat that the law of common sense is the only one governing and controlling the grading and inspection of wheat for millers of this State, and, if thoroughly practiced by the fraternity, it will certainly be to their benefit.

Respectfully yours,
S. Z. HAWBECKER.
C. HEEBNER.
L. W. PYLE.

A motion to adjourn until 7:30 p. m. was put and carried.

THE EVENING SESSION.

The milling machinery and improvements and specimens of flour, middlings, etc., that were on exhibition in the sample room of the Logan House and on the east portico attracted the attention of the millers during the greater part of the time between the afternoon adjournment and the hour for assembling in the evening, and it was past 8 o'clock when the Convention was called to order.

Although it was supposed that the passage of Mr. Hayes' resolution relative to the insurance company matter had disposed of that question, it sprang up in the Convention again, and its discussion was permitted to be continued.

A motion was made to take steps for the preliminary organization of the mutual company.

President Duncan, in answer to inquiries, said that it was desired to ascertain if the \$100,000 necessary before a charter could be obtained could be guaranteed, and for the purpose of learning this the Insurance Committee was expected to communicate with absent members of the Association, and to report what had been done to the next meeting.

Mr. Isenberg proposed that an election of officers be had, consisting of President, Adjutant, Board of Directors, etc., for the sake of organization, and then give notice of application for a charter as soon as \$100,000 are guaranteed. In six months new and permanent officers could be elected.

The discussion was continued at some length, touching upon various phases of the situation, among others arising the suspicion of organizing in conflict with the State laws, which was quickly set at rest, and it was eventually moved that the President pro tem, Mr. Duncan, be clothed with power to appoint thirteen Directors (including five members of the Insurance Committee) for the insurance company, the Directors to elect the active tem-

porary officers. The motion was carried, and the matter was thus disposed of.

Secretary Schoch said that as due notice had been given of an intention to revise the constitution, two-thirds of the members could now proceed to do so if they deemed it advisable. The revision consisted of an amendment changing the reading of the article in regard to meetings from "semi-annual" to "annual." It seemed to be the opinion, from what he knew of the sentiments of the millers, that the annual meetings were sufficient.

A motion to strike out "semi-annual" from the constitution and insert "annual" was amended by Mr. Small so as to read "on the first Tuesday of September" (annually). An amendment to the amendment by Mr. Hawbecker, changing "first Tuesday of September" to "first Tuesday of October" was accepted by Mr. Small.

The proposed change in the constitution was objected to by a Philadelphia delegate, who argued in favor of semi-annual meetings, in order that those who may not be able to attend one meeting may succeed in attending another meeting the same year. Arguments were also made in favor of the social features of these occasions, and it was stated that much more benefit was to be derived from meeting twice a year than by assembling annually.

Mr. Hayes suggested that the whole question be postponed for six months. He fully believed, from the present outlook of affairs, that something would transpire in six months that would demand the attention of the millers, and they would desire another meeting by that time.

Mr. Hayes' suggestion, in the form of an amendment, after a lively oratorical tilt was put and carried by a large majority.

The discussion of the report on mill machinery, which had been postponed from the afternoon session, then came up. It proved of much interest to the millers, the subjects of millstones, rolls and purifiers receiving thorough treatment at the hands of Messrs. Hawbecker, Hayes, Brown, agent for the Garden City Purifier, and Forney, representing the Hunter Purifier. There was a great deal of instruction and information obtained from the views expressed, and the several gentlemen were listened to attentively.

The selection of a place at which to hold the next semi-annual meeting on the second Tuesday of January, 1880, then came before the Convention for disposal. Chambersburg, Wilkesbarre, Easton, Harrisburg and Philadelphia were named, and all were subsequently withdrawn with the exception of Chambersburg and Harrisburg, upon which a vote was taken, resulting in the selection of Harrisburg. At the January meeting officers of the Association are to be elected.

Mr. Pyle, of Bryn Mawr, asked for the passage of a resolution rescinding the resolution adopted at a previous meeting discouraging the growing by farmers of the Fultz variety of wheat. Mr. Pyle's proposition was almost unanimously voted down.

The Convention then adjourned.

A NEW CAR FOR TRANSPORTING GRAIN.—Chicago exchanges describe at length a novel invention called Prosser's Twin Cylinder Cars, to be used for transporting grain. The cars consist of large cylinders made of boiler iron, about 6½ feet in diameter, to which are securely attached two tires of steel, made with a flange in the shape of the ordinary car wheel, with this difference—that they are very much larger. These tires are so placed as to fit the ordinary railway track, and really are the wheels of the car. Through the center of the cylinders passes a hollow steel tube, with perforations which admit air to the grain within, the air afterward finding egress through numerous small apertures in the body of the cylinders. By this means perfect ventilation is maintained, and, at the same time, the corn or wheat is thoroughly dried while in transit, preventing its molding, a not unfrequent occurrence by the ordinary methods of transportation. The hollow tubes or axles project far enough through the cylinders to allow the journals to revolve in a box, which in turn supports a frame-work and covering, enabling brakemen to pass over and operate brakes that are attached to these as to ordinary cars. When completed and ready for use, the cylinders are filled with grain, and in that condition the load is rolled on the track to its point of destination.

The Philip Best Brewing Company, of Milwaukee, are about to build an elevator 60 feet wide and 160 feet long, near their South Side Brewery.

Notes on the Uses of Wire Rope.

Two kinds of wire rope are manufactured. The most pliable variety contains 19 wires in the strand, and is generally used for hoisting and running rope. The ropes with 12 wires and 7 wires in the strand are stiffer and are better adapted for standing ropes, guys and rigging. Orders should state the use of the rope, and advice will be given. Ropes are made up to three inches in diameter, both of iron and steel, upon special application.

For safe working load, allow one-fifth to one-seventh of the ultimate strength, according to speed, so as to get good wear from the rope. When substituting wire rope for hemp rope it is good economy to allow for the former the same weight per foot which experience has approved for the latter.

Wire rope is as pliable as new hemp rope of the same strength; the former will, therefore, run over the same sized pulleys as the latter. But the greater the diameter of the sheaves, pulleys or drums, the longer the wire rope will last. In the construction of machinery for wire rope it will be found good economy to make the drums and sheaves as large as possible.

Experience has demonstrated that the wear increases with the speed. It is, therefore, better to increase the load than the speed.

Wire rope is manufactured either with a wire or hemp centre. The latter is more pliable than the former, and will wear better where there is short bending. Orders should specify what kind of centre is wanted.

Wire rope must not be coiled or uncoiled like hemp rope. When mounted on a reel, the latter should be mounted on a spindle or flat turn table to pay off the rope. When forwarded in a small coil without reel, roll it over the ground like a wheel, and run off the rope that way. All untwisting or kinking must be avoided.

To preserve wire rope, apply raw linseed oil with a piece of sheep skin, wool inside; or mix the oil with equal parts of Spanish brown or lamp-black.

To preserve wire rope under water or under ground, take mineral or vegetable tar, and add one bushel of fresh slacked lime to one barrel of tar, which will neutralize the acid. Boil it well, and saturate the rope with the hot tar. To give the mixture body, add some sawdust.

In no case should galvanized rope be used for running rope. One day's use scrapes off the coating of zinc, and rusting proceeds with twice the rapidity.

The grooves of cast iron pulleys and sheaves should be filled with well seasoned blocks of hard wood set on end, to be renewed when worn out. This end wood will save wear and increase adhesion. The smaller pulleys or rollers which support the ropes on inclined planes, should be constructed on the same plan. When large sheaves run with great velocity the grooves should be lined with leather, set on end, or with India rubber. This is done in the case of all sheaves used in the transmission of power between distant points by means of rope, which frequently run at the rate of 4,000 feet per minute.

Steel ropes are, to a certain extent, taking the place of iron ropes, where it is a special object to combine lightness with strength.

But in substituting a steel rope for an iron running rope, the object in view should be to gain increased wear from the rope rather than to reduce the size.

Head-Gates.

The head-gate is also an important feature of the arrangement necessary for utilizing the power afforded by a dam. Those of our readers who are familiar with the subject are well aware that an urgent need exists for a better plan of construction for head-gates than the old lift-gate, which has a troublesome peculiarity of being almost invariably out of order just when it is most needed. The majority of head-gates are hoisted and exposed to the warping influence of the sun and weather, so that in a short time it requires much effort to shut one of them down; and in some instances they can not be got down at all.

A gate arranged similar to a butterfly valve, and entirely under water, turning horizontally by means of an upright stem, could be constructed to good advantage. The stem or upright would serve as a pivot or hinge just above and below the gate, upon which it can turn or swing. It must not be in the precise center, which will admit of a little more pressure on one end than on the other, thus keeping it closed when not left or kept open. Another and somewhat similar method would be to let the pivots be at each end of the gate, and instead of swinging around horizontally as the

other, it may turn down toward the inflowing water, laying entirely under water in a level or flat position. The stem or staff which is fastened to it instead of turning around, forming an axis as in the first case, swings down in the direction of the gate and lies in the water also. In either case, a fore-bay should be built of a greater length than width, planked up tightly on the sides and top, with trap doors in the top; the front and lower ends also closed by planking down to as much as six inches below low-water mark. The gate may then be set about the middle of this flume or fore-bay, in a strong partition, which is really the separation between the dam and race.

When the trap doors are kept closed, there is no danger of the water freezing, even in the coldest weather, in being entirely protected from exposure. As the gates are generally open, and therefore, of course, under water, they are not exposed to warping by the influence of the air and sun, but when needed are sure to fit and to be easily handled and effective. Many instances might be given in which defective head-gates have been the cause of the washing out and entire destruction of valuable mill property. Cases have also frequently occurred in which the head-gates, owing to their being either frozen up or warped to such an extent as to be unmanageable, could not be closed in time, and, as a consequence, a small wash or break in the head-race became the source of extensive damage, requiring a heavy outlay of money for its repair. It is easily seen, in such cases, after the catastrophe has occurred, that true economy would have been consulted by providing in the first place a head-gate which could have been easily reached and promptly closed, thus preventing any material injury. The teachings of such an experience are of course useful in guiding the subsequent operations of the owner; but in this, as in many other matters, "an ounce of prevention is worth a pound of cure."—*Leffel's Wheel Book.*

South Australia's Yield of Wheat.

The *Adelaide Observer*, in accordance with its custom, anticipates the official statistics by furnishing an approximate return of the wheat yield of South Australia, derived from the harvest just completed: "Coming to the details of the harvest as furnished by our correspondent," says our contemporary, "we find that the total area reaped for wheat this season has been some 1,286,355 acres, or 122,709 acres in excess of 1877-8, which in its turn showed an excess of 80,697 acres over 1876-7. The total yield we estimate at 9,007,624 bushels, making 7 bushels and a fraction per acre. The fraction does not amount to 2 oz. per acre, so it is scarcely worth consideration. Last year the general average was 7 bushels 46 lbs. per acre, and the year preceding that, 5 bushels 24 lbs. Notwithstanding the fact that we have 122,709 acres more under cultivation, the gross yield of the current season does not reach, according to our calculation, that of last season by 27,068 bushels, the total then being 9,034,692 bushels. Out of the 9,007,624 bushels which we reckon to be the gross product of the harvest now gathered, there will be required for seed some 1,410,000 bushels. This at the rate of one bushel per acre. Formerly 1½ and 1 bushels per acre has been allowed by statisticians; but as this sowing is now more generally adopted, it is believed that an allowance of one bushel per acre will be ample. We do not apprehend that the increase in the area cultivated in 1879-80 will much exceed that of last season, so that the gross requirements for the purpose of seed will, as we have said, be about 1,410,000 bushels. We set down 5 bushels per head as sufficient for food, and estimating the population at 260,000, this will absorb another 1,300,000 bushels. When the necessities have been provided for, there will be left available for export, 6,297,624 bushels, representing in round numbers from 150,000 to 170,000 tons of wheat."—*Sydney Mail.*

A LARGE FLOUR SHIPMENT TO IRELAND.—The Old Globe Mills of Mr. Wm. Hayden, Tecumseh, Mich., had been running, previously to the 5th of June, several days and nights to fill an order from Messrs. J. & E. J. Tighe, Sligo, Ireland, for 32 car loads of flour. This order had to be all sent at one time. This shipment considerably exceeded the one sent across the Atlantic by Mr. Hayden a few weeks previously. It amounted to 4,572 barrels, and is the largest shipment of flour in one order ever sent from Tecumseh. Mr. Hayden had also received from the same Irish firm an order for six hundred tons of flour.

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Remarks on Grinding.

BY JAMES McLEAN.

In the British town mill, grinding requires especial care and good judgment. Stone dressing, often the highest paid department, being mere slight of hand work compared to the skill and judgment required in a good grinder; carelessness or want of skill is easily checked with the stoneman, it is far otherwise with the grinder; negligence or bad judgment occasionally causing a serious loss, or altering the character of the flour completely, the master too often not having the skill to know what is wrong. There is little divergence in the practice of stone dressing, so that a little experience enables the master to know the good from the bad one. Grinders diverge widely in practice, not only individuals but whole countries, so that sometimes it is better to have a grinder with little experience under able guidance, than trusting wholly to one with a life-long experience.

The principal qualifications in a good grinder is to have the sense of feeling well developed; some individuals are remarkable for the extreme sensitiveness of their feeling, with others it is so dull that that they are in perpetual doubt as to whether they are right or wrong, others again have it better in one hand than the other; my own experience showing me this being always in anxious doubt for some years, when young feeling with the right hand as is customary (and grinders well know that whenever they begin to doubt and get anxious they make the sense of feeling still worse), till noticing the left hand had the sense more perfect, I rarely used the right one afterwards. It is well known how cold, dirt, or handling tools such as the pick handle affects the feeling, and they have to exercise it for some time after before they can trust it. Spouts are often badly arranged also for catching the flour. When the arrangement is bad, a piece of zinc can often remedy it a good deal, so as to throw it all into the hand in a gentle stream, aiding the feeling greatly, and giving a guess as to the speed.

The general practice in feeling the flour is to let the hand fill more or less, then press down the thumb through it and along the points of the fingers, that is, on the top of the pressed down stuff. Some press down the thumb, shutting the hand at the same time on a full handful. Inexperienced individuals sometimes imagine that rubbing small quantities between the points of the fingers and thumb is always sufficient, but practice teaches otherwise—the sense of feeling of very few being so perfect as to detect the sharpness or size of the particles in very close grinding, unless they are in number sufficient to cause a more or less thickness between the thumb and fingers; pressure seeming to aid the sensation without their contact. Thus, in close grinding, pressing the thumb repeatedly on the descending stuff on the points of the fingers, and then rubbing it along, enables one to feel a sharpness; when, by rubbing unpressed stuff, no sharpness or particles can be detected. With the most of wheats, however, it is safer to feel the particles with a loose, easy feel, on the points of the fingers, judging their size better thereby, and the pressing of the thumb down through a handful giving an idea as to the average sharpness, or if there is any or what amount of felled stuff. This is a term applied in Scotland when it is overcrushed or polished by the rotary motion being destroyed, and expresses the real injury, as it takes some time to recover: the atmosphere restoring its adaptability for fermentation, but it never fully recovers from the effects of the polishing. The experienced grinder readily detects it from its oily smoothness, and if the proportion is too great it begins to lie on the outside of the stone, it being unable to grip a portion of it at all. It thus cause increased pressure, heat, and moisture, and spreading over like paste, stops all air motion, and, if not checked, finally lifts the stone and rolls out in steaming worms. Even with a slight pasting over, it is better to lift the stone at once, as it takes a long time of wasteful and injurious grinding to partially recover, and never recovers its full keenness till lifted. In choosing a medium betwixt over crushing and over sharpness, conjoined with their effects on the bran, lies the skill of the grinder—some wheats standing a considerable amount of each without injury, while with others no freedom can be used either way.

As mentioned before, proper wheat grinding being the right approximation of the crushing and cutting process applied, I will endeavor to explain the different styles of grinding, and the effects of each.

Wheat for grinding purposes may be divided into four qualities, namely, weak-soft and weak-hard, and strong-soft and strong-hard.

The first, or weak-soft, is easy ground in comparison to the moisture it contains, and can go over a great amount of face without injury to the bran, or over polishing of the flour, from the light pressure required to disintegrate it, and hence have broad, clean bran, can be free and easily dressed, and is not so apt to be injured as the others.

With the second, or weak-hard, practice differs more widely, and it is more often injured. Grinders may be divided into two main classes. There are those who rule the feed chiefly by heat, and never vary the feed much, being determined, whatever the quality of the wheat, neither to have the stone what they consider too low, nor yet pressed with what they imagine too much feed, so as to avoid, in their opinion, overheating. These do well enough in country mills, where British wheat is always the ruling quantity in a grist, or town or country mills, where they keep the grist of an average softness; but where hard wheats are put often on by themselves they are total failures. The other class are those who know there is a certain freeness whether on hard or soft wheats, which seems to suit the baker best; and to get this certain freeness, which experience alone can teach, they vary widely, both with feed and closeness of grinding, and consequently with heat, and nothing is more common than for the latter, if strangers (unless they follow the hobby of the former), to be set down as knowing little about grinding; whereas, a little reflection would show that it is a very easy matter to grind on the former principle. The latter attempts the right approximation of cutting and crushing by the only means commonly available at their command, but they sometimes err by having too much heat on a heavy proportion of felled stuff, as a stone can work with a considerable amount of the stuff felled before pasting over, the part that hasn't the rotary motion destroyed, carrying it along with it; but from its injurious effects, a heavy proportion should always be avoided. Hard-weak wheats, however, if the stone is in good face, are not easily felled in the grinding, it taking a great heat and power to do so, as all millers avoid letting the stones smell or char from friction on each other. Although some scientific men say this is the cause of the heat, the experienced grinder knows it is nonsense, as with a three-horned rhynd he can run the stones clear, yet cause any amount of heat he wishes by varying the feed. Where there is clear face friction it soon warns him by the nose—such as the eye speed getting under three feet per second—losing centrifugal force, when they have to be wider separated. Hard-weak wheats can stand the greatest amount of crushing of all wheats without injury; but as some bakers treat flour pretty much alike, it is often safest to grind the strong-hard similar. It is the opinion of many that the sharper the flour the better, but they often find themselves mistaken. Strong-hard may be ground as sharp as they please if properly pounded and watered by the baker; its strength or elasticity enables it to stretch into fine thin cells. It is different with weak-hard. If ground sharp it is what the bakers call short, it can't take the same amount of water without injury; its want of elasticity won't let the large particles stretch sufficiently to make thin cells, and in this state it makes an inferior, troublesome loaf. It follows, therefore, it requires a heavy crushing power, provided there is not an undue amount of heat. It is the case also, the drier the wheat the less injurious the heat, and the less liability to be felled; splintering taking place till it is reduced to a very small degree, and the heavy feed saves the bran from being cut up badly, as the sharp particles rolling out have a most destructive effect in pulverizing the bran. To so great an extent can subdivision be carried with some hard wheats, that, if the stone has a bad face or the slightest irregular escape, it will issue sharp, though the stone is charred in the attempt to soften it, which is often checked by putting on such a heavy crushing power, or large feed, that part of the flour is felled, which greatly retards its outward progress and hinders the too rapid escape of the sharp particles, the diminished air inlet allowing extra crushing at the rim to equalize them more.

It is a very common opinion also that hard wheats require a large amount of face; but this is most injurious to both flour and bran. The former is acted on similar to the pease meal in the pease-stone, and issues in a polished state, or over free, or so short that, if weak wheat, the baker has the utmost difficulty in getting it to adhere at all; and though feeling sharp, the grinding is in reality very low, and the bran is subjected to a long destructive pulverization amidst the sharp rolling particles, and perfect separation afterwards is impossible. What is needed for hard wheat is as small and true a face as possible, with not the least escape, however, for irregular grinding; as when free of overcrushed or felled stuff, it rolls rapidly outwards, and irregularities of escape or face tell seriously by unequal grinding from traveling over so little face.

As an instance of extreme heavy pressure grinding, I will mention Californian and Australian practice. In both those countries, the majority grind low, and with a heat unknown in most British mills. The Australians have the British stonespeed and furrows, the Californians the American. In the drier parts of Australia, ten bushels an hour is not uncommon; in California, with the greater stonespeed, they are often forced to put through double that. In both, the stones are kept so low that there is often a portion of felled stuff. Then what occasions this low grinding and heavy pressure with the strong Australian wheat? It is to save the bran, and make the flour handier wrought and whiter; as especially clear or flinty wheats are like glass, the more they are ground down the whiter they

get. To show that even high ground strong flour is not always the most acceptable to the bakers, some of us disagreeable bread as ever I saw was in a district famous for its fine strong wheat—namely, Adelaide, in South Australia. The only reason I could imagine for it was that it was baked from the cheap coarse ground products of some of the country mills, with deficient power and coarse-clad wire machines, some of them at that time not going over 74 with their finest wire. The flour had any amount of strength, but some of the bakers, apparently had not the judgment or industry to take full advantage of it by giving it sufficient time and water; and in thirty hours after it got almost like a biscuit, so that the low-ground, heavily-pressed stuff, with its attendant heat and better flour produce, obtained a superior price; on the whole, not that I approve of heat or violent pressure if it can be avoided, but with large stones and high speed to save the bran and obtain handy wrought flour, the miller can't do otherwise. Without doubt, the great heat has often a deleterious effect; as while in Australia, and as at that time it sometimes could not supply itself, they occasionally got Californian wheat and flour to make up the deficiency—noticing they could often make a superior article out of the wheat to the flour imported, and landing on the Californian coast afterwards.

Well do I remember the first mill in San Francisco I went into, the stones appeared to be four feet, flying about 200 revolutions; putting my hand into the descending stream from one of them the heat was so intense that the thought occurred to me at the time, this explains the often inferior flour, but the miller could not do otherwise; the stone size and speed were there, and he must do the best possible; they were furrowed in the usual American system, which though forcing the the stones to do their utmost, is still the best for heavy pressure grinding (if the friction rate is low enough), giving the bran less face to travel over, and equalizing the pressure over the whole of the stone. Though the ripe wheat in the interior of these countries is exposed to the sun's rays, occasionally going over 140 degrees without injury, it is quite different to the heat produced by violent crushing, which raises it to a high heat in a moment. And though dry wheat can stand a much higher heat than soft wheat, still all experience goes to show the milder crushing is applied, the better the flour, if other circumstances, such as bran cutting and sharpness, do not counterbalance the advantage; and I have invariably found when the stone speed could be reduced to eighty or ninety revolutions on hard wheats, the baker was much better pleased with the flour. Heavy pressure grinding with hard wheats has another advantage besides saving the bran—that is the large yield of fine flour without regrinding the sharps. I have known them with a moderate stone speed to go over forty-seven pounds fine flour per bushel, with the silks highest number at 150, without returning any the sharps to help dressing at all. To obtain then for hard wheats a milder crushing pressure, the only alternatives are the Hungarian method of regrinding and separation to save the bran; or a slow stone speed and small amount of travelling surface to preserve it. The rule is with wheat as with all other substances; the harder and less tough it is the more it is adapted for disintegration by crushing, and requires the more slow and less violent friction surface to avoid heat; likewise as little travelling surface as possible, to save the bran, re-chipping being less required as the hardness increases.

Strong soft is a most difficult wheat to deal with, and is the most apt to be injured for fermenting purposes; and as the nearer the flour and bran approach each other in toughness, the more difficult will be their separation; the liability to compression, which tells so seriously on fermentation, increasing with the toughness, the cutting principle has to be brought more into play to get clean bran and free flour, and it should be kept totally free of felled stuff if possible. Many British millers err greatly in trying to get broad bran with this wheat; far better have it cut up for the purpose of obtaining free flour. With stones running under 120 revolutions, and much of the grinding done near the eye, some tough foreign wheats defy them altogether to make a good job of them, even with as low a feed as three bushels an hour—the distance between the stones has to be so great—to avoid felling, or destroy the rotary motion of the flour, that the bran in spite of its long passage issues badly cleaned. The slow stone speed is not able to chip the tough fibrous particles enough, and the dressing is slow and difficult, and all this though it was ground almost without appreciable heat. The only means at the miller's disposal for increasing the cutting power, is by increasing the heat, fresh cracking, or increased stone speed. The latter, though it would be the most convenient, is very rarely available. On some of those wheats, so easy is the pressure required that the stones can make over 200 revolutions a minute without an injurious heat or much dust. The increased speed gives greater cutting power, the tough particles are rapidly chipped into shape, keeping up the rotary motion with the stones closer, thus cleaning the bran better, and though it is much cut up in appearance, there is little of that destructive minute pulverization to which the bran of hard wheats is subjected to, amidst the hard rolling particles of flour between close friction surfaces. With the soft wheats the pressure has to be light, with a considerable distance between the surfaces, to keep up the rotary motion, and the soft flour particles enable the bran to travel over a great extent of surface without affecting easy separation afterwards; when ground free with little pres-

sure it is the bulkiest of all flours, and can be used immediately, requiring delay in using according to the extent of the crushing.

Strong hard wheat requires often almost similar treatment to the weak hard, the cutting power, of course, needing to be brought more into play with equal moisture, although there is the important difference that it can be ground as sharp as wished, if properly treated by the baker afterwards. For special purposes, such as pastry bakers often require it for, light pressure grinding, which, to save the bran, can only be done by the Hungarian method, or the slowest stone speed possible, tells greatly in its favor. The particles are then free of dust (or very small particles which abound in proportion to the violence of the shivering) in which state, with the superior time and labor bestowed upon it by the baker, it seems to attain the greatest amount of strength, but the miller, at the same time, is put to more expense from the regrindings required, or the greater amount of sharps resulting from the slow-stone speed.

Correspondence.

PAYNE'S DEPOT, Ky., July 29th, 1879.—Dear Sir: The fall meeting of the Kentucky Millers' Association takes place at Lexington, September 2d, immediately following the great Central Kentucky Fair, which closes August 30th, thus giving visitors to attend the Fair and Convention if they desire. President Geo. Bain and Vice-President D. E. Roberts, of the National Association, with our own President, W. N. Potts, are booked for addresses. An enthusiastic session is anticipated.

Respectfully, E. D. HIX.

A flour mill at La Crosse, Wis., was burned July 28th.

Evarts & Co., millers, Dexter, Mich., reported assigned.

Cartzenadner & Bro., millers, Frederick, Mo., have failed.

S. C. Thompson, of the milling and banking firm of S. C. Thompson & Co., Bonville, N. Y., is dead.

Messrs. Burroughs & Pierson, Flint, Mich., are rebuilding their flouring mill which was recently destroyed by fire.

Mr. Macomber's mill dam, at Elroy, Wis., went out in the late freshet. He has a large force at work repairing damages.

Thos. Schuetz, proprietor of the "Unnah Mills," St. Augusta, Minn., is changing his mill from a custom to a merchant mill.

Six thousand one hundred barrels of flour, 1,800 sacks of export flour and 11,000 bushels of wheat were exported from Duluth on the 23d inst.

The flour mills of M. Moak, of Lawrence, Kas., P. W. Connelly, of Bayonne, N. J., Cram & Smith, of Chester, Vt., have recently been destroyed by fire.

The Cincinnati Enquirer's special says that Hyatt's flouring mills, together with 4,000 bushels of wheat, at Washington, Ind., were burned July 24th. Loss, \$16,000; insured in the Niagara and Franklin for \$9,000.

Brandt's steam flour mill, at Mount Joy, Lancaster County, Pa., is being improved and having new machinery placed in the different departments. It will be one of the largest mills in the country when completed.

August Zentner, while oiling the machinery in the mill of Fiegler, Wable & Haupt, at Manitowoc, July 25th, was drawn into the machinery and terribly bruised and mangled. His injuries are very serious, possibly fatal.

J. B. A. Kerns' Eagle Mills, Milwaukee, are closed down to the 10th of the month, to admit of modern improvements, the importance of which the proprietor is always willing to introduce and acknowledge their merit thereof.

A great flour mill enterprise is in progress near Harrisburg, Pa. John Hoffer, the well and favorably known miller of that part of Pennsylvania, and others, are building an immense steam flouring mill, at a point on the line of the Pennsylvania railroad, just below the city of Harrisburg. The new mill is to be called the "Paxton New Process Mill." The building will cover 5,440 square feet of ground, being 85x64 feet, and will be built of stone. It will be supplied with the most improved "patent process machinery" for manufacturing flour. A portion of the apparatus will consist of 33 burrs and 32 or 33 bolting wheels, which will receive force from an engine of 200-horse power. The operations of the establishment will necessitate the employment of a large number of skilled hands. At present the two mills owned by Mr. Hoffer, one a water power and the other a steam mill, produce between 200 and 300 barrels of flour per day. The new mill when completed will, it is estimated, increase the daily production to between 500 and 600 barrels.

IT BEATS THEM ALL.

Lehmann's Method of Truing the Faces of Mill Stones.

Ever since the announcement was made of the novel and important invention by Wm. Lehmann, of Milwaukee, of a simple method of securing a perfectly true face on mill-stones, great interest has been manifested by millers all over the country. His method is so perfect that, after he has trued up the faces of the upper and lower stones, he can place a row of single thicknesses of paper all around on the lower stone, and then let down on it the upper one, and every piece of paper will be held tightly between the stones. This he has done frequently. Every miller knows the value of a true face. No patent staff of any kind is required. Mr. Lehmann's method has met with the warmest approval wherever introduced, as can readily be seen by reference to the letters which we append below. The first of which is from George G. Smith, the well-known millwright, of the firm of Smith Bros., No. 454 Canal street, Milwaukee, a gentleman to whom the Millers' National Association are under no small obligations for efforts made in their behalf.

MILWAUKEE, June 21, 1879.—Wm. Lehmann, Esq.—Dear Sir: I herewith give you my opinion concerning your improvement in staffing and truing mill-stones. I have seen the improvement used, and paid attention to the improvement it made in the grinding, and found it to exceed anything I have seen. I find that it is the best method so far invented, and find it entirely new and novel, and would cheerfully recommend it to all that have faith in a true face on a stone. Yours truly, GEO. G. SMITH.

GENEVA, Ill., May 23, 1879.—Wm. Lehmann, Milwaukee, Wis.—Dear Sir: Enclosed find Chicago draft for \$100.00, as per agreement with Mr. Bennett, for your patent for use in our mill—Bennett's Mills, Geneva, Kan. county, Illinois, 8 run of 4-foot stones. We consider it the best thing that ever was for straightening the face of a mill-stone, and worth the money. Yours truly, BENNETT, BROS. & COE.

PLYMOUTH, Wis., May 9, 1879.—Mr. Wm. Lehmann: Heretofore we have used the old-fashioned long staff as well as the circular staff, but since testing the merits of your method of staffing mill-stones we are convinced that it is by far the best yet discovered. Being millers of many years' experience we supposed we knew how to staff a stone, but we confess, we were wrong entirely. Your method of staffing is beyond any question the most perfect used so far, and in our opinion no miller can afford to do without it. Respectfully, HOTHKISS & PUHLMANN.

BRANDERDAM, Wis., March 10, 1879.—Mr. Wm. Lehmann: It was as much a surprise as a pleasure that we witnessed your system of staffing a stone, and have become satisfied that it is the correct principle, and we hereby certify that we shall use Mr. Wm. Lehmann's device for staffing mill-stones in our mill, and do say that it is the best device we have seen.

E. R. HOYT & SON, G. S. Campbell, head miller.

FOX LAKE, Dodge Co., Wis., March 26, 1879.—Mr. Wm. Lehmann—Dear Sir: We enclose a draft of \$100.00, the balance due you for your method of staffing stones. We can recommend it as being a great improvement over anything we have seen. Yours truly, COMAN & MORRISON. J. W. Ashley, head miller.

WATERTOWN, Wis., Feb. 26, 1879.—This is to certify that we are using Wm. Lehmann's method of truing and staffing mill-stones in both of our mills, and find it superior to anything we have yet used or seen, and found on bringing the two faces of the stone together we could lay paper between each two separate lands and letting the stone down none of same could be withdrawn. F. MILLER & CO. W. H. Foote, head miller.

Letter from a millwright since 1840 and mill owner for the last 15 years.—This is to certify that I have used Mr. Wm. Lehmann's method for straightening or truing the face of mill-stones for the past four months, and am satisfied that it is far the best of any in use. For with the use of this method we are enabled to make more middlings and more uniform and of necessity a better quality of patent flour. I would recommend its use. Most respectfully yours, ORVILLE HATHAWAY.

Dated Oconomowoc, Waukesha Co., Wis., Feb. 18, 1879.

ODONSBURG, June 9, 1879.—Wm. Lehmann—Dear Sir: Your favor and bill came duly to hand, your draft came and was paid. I am well pleased with the work. I have fixed 3 run; they do nice work. I hope you will make some money, as you have a valuable improvement to mill owners. Yours truly, HENRY RODER.

Read Mr. Lehmann's advertisement on another page and send in your order. His terms are reasonable, and his method is well worth the money asked for it. Address all communications to Wm. Lehmann, 722 Fourth street, Milwaukee, Wis. U. S. A.

A CARD.

From Notbohm Brothers.

Impression having obtained that our machines are subject and liable under the Geo. T. Smith patents, we herewith append letters which will explain themselves, and can assure our patrons that ours is the safest regarding patents, and more reliable as to merits than any purifier.

NOTBOHM BROS., Milwaukee, Wis.

MILWAUKEE, Sept., 23, 1876.

Col. Thos. S. Sprague, Attorney for Geo. T. Smith, Plankinton House, Milwaukee, Wis.

DEAR SIR—In your investigation into the validity of the patents of Geo. T. Smith on the construction of Middlings Purifiers, did you find any infringement in the construction of our machine, as covered by patents to E. N. LaCroix, assignor to us, and ourselves, upon any of Smith's patents upon the construction of his purifiers? Some of our customers using our traveling air blast machines have been threatened by different parties to pay tribute, two bringing their cases into the courts, one at Springfield, Ill., the other at Rochester, N. Y., both being defeated, and our patent sustained, and Mr. Smith acknowledging that our machines as now built, are not subject to his rights or claims. You will oblige by answering the above question, and thereby enable us to place ourselves right be-

fore the community. Very truly yours, NOTBOHM BROS.

PLANKINTON HOUSE, MILWAUKEE, September 23, 1876.

Messrs. Notbohm Bros., Milwaukee, Wis.

GENTLEMEN—Referring to your letter of inquiry of this date, I reply that upon a careful examination of the various patents issued for my client, Geo. T. Smith, Esq., for infringements in the construction of Middlings Purifiers, I find no claims which would be infringed by the construction of such machines as described in the claims of the patents to E. N. LaCroix, dated respectively June 3, 1873, and reissue of December 30, 1873, under which I am informed you manufacture your machines.

I am very clear on this point, and am happy to find one manufacturer in the United States who does not infringe Mr. Smith's patents upon the construction of Middlings Purifiers. Respectfully yours, THOS. S. SPRAGUE, Att'y for Geo. T. Smith.

Situations Wanted, etc.

Millers, Engineers, Mechanics, etc., wanting situations, or mill-owners or manufacturers wanting employees, can have their cards inserted under this head for 50 cents per insertion, each with order.

WANTED—A situation as head miller. Am thoroughly competent. Address correspondence to EDWIN PRIEST, P. O. Box 618, Augusta, Ga.

WANTED—Two young millers to work in a custom mill; must understand stone dressing and grinding; to work under a good miller. Good references are required, and state what wages are expected. Address GLADE & SCHAUPP, Columbus, Nebraska. autf

SITUATION WANTED—An experienced head miller, having been employed for many years in the Austro-Hungarian steam flour mills, desires to make a new engagement. Address B. G. 938, care of Hasenstein & Vogler, Vienna, Austria. Je2t

WANTED—A young miller who is well posted to take charge of my mill. He must thoroughly understand dressing and keeping the stones in order. In answering this state how long and where you have worked, and what wages you expect. Address VARIETY WORKS, P. O. Box 29, Union Springs, Ala. jylt

SITUATION WANTED.—By a practical miller in grist or grist and merchant work. Is a good stone-man. If no satisfaction can be given no pay is asked. Can give good references. Please state salary and address. A. V. Kemerer, Waunakee, Buffalo Co., Wis. Respectfully, A. V. KEMERER. autf

SITUATION WANTED.—In either a merchant or custom mill; have had eight years experience in the business and guarantee satisfaction in all branches of the business; am a single man; willing to go anywhere. Good references given if desired. Parties answering this advertisement please state terms. All letters answered promptly. Address MILLER, Runch's Gap, Clinton county, Penn. autf

TO MILL-OWNERS.—Situation wanted by an experienced miller to take charge of a mill or stone dressing in a new process mill. Have worked the new process since the beginning of manufacturing patent flour in this country, making from 20 to 68 per cent of patent flour. Reference furnished from the best of Milwaukee mill-owners if necessary. Any one in want of my services please address No. 221, Grand Avenue, third floor, Milwaukee, Wis. autf

SITUATION WANTED.—In new process mill; have had valuable experience both in building new and remodeling old mills on the system of high grinding. I desire to make an engagement with parties about to build new mills or change old ones, and will guarantee satisfaction. Am a practical miller, and can take the place of a millwright in every detail and have a number of improvements in connection with high grinding not generally in use. Have a good knowledge of all the latest milling machinery, and believe I can make myself profitable to any mill owner on the new process. Wages an after consideration. Correspondence solicited. Address B. B. SHEARS, North Lake, Wis. autf

For Sale or Exchange.

Advertisements under this head \$2 per insertion, each with order.

FOR SALE—One-half of 3-run, water power flouring mill, all in good order, and fully equipped with purifier, brush, smutter, separator, Parker scales and good office. Will sell easy on terms, and take part in good farm. Jy* W. D. DALLY, Woodbine, Iowa.

FOR SALE—A small Steam Flouring Mill, 23 miles below St. Louis, on the Mississippi river and Iron Mountain Railroad. Everything in good running order. Will take part pay in country store goods. For particulars address C. W. FUNK, Sulphur Springs, Jefferson Co., Mo. Jy*

PARTNER WANTED—I have a good Grain Elevator, large enough to run a flouring mill. Would like a partner who can furnish the necessary machinery. Parties having mills not paying will find it to their interest to correspond with me. Je* T. B. GALLAGHER, Larned, Kansas.

FOR RENT—I offer for rent my Grist and Saw Mill; 3 run of stone; House and Garden; Good Water Power; Water all year round; for term of years. For particulars call in person or by letter. M. HELD, Erfurt P. O., Jefferson Co., Wis. Je

FOR SALE OR LEASE—For a term of years. The Cedar Street Flouring Mill, St. Louis, Mo. New, and in complete running order, having six runs of burrs and a capacity of three hundred and fifty barrels per day. Adjoining this property we have large vacant lots, which we will sell on very reasonable terms. Apply to MCCREY & TOWERS, 705 Pine St., Street, St. Louis, Mo. Jy*

FOR SALE—I offer for sale a first-class modern flouring mill in this city, making 100 barrels a day; power-water and steam; have not stored a barrel this crop, selling as it arrives in New York; this is a fine opening for any one wanting a mill; property cost \$40,000, but will be sold cheap and on reasonable terms; reason for selling, belongs to an undivided estate. Address J. D. GREENE, Administrator, Faribault, Minn. Je*

FOR SALE.—Wishing to concentrate my business, I offer for sale one of my four mills situated at Beckenridge, Sangamon County, Ill., 14 miles from Springfield, on the Ohio & Mississippi railroad, in a good milling country. This is a good two-run mill, nearly new with latest improvements and elevator attached for handling grain. Mill cost over \$10,000; will sell low, and on good terms. For full particulars, address T. J. McWANE, Versailles, Brown County, Illinois. Jy*

FOR SALE.—"Pearl Mills," at Columbia, Maury Co., Tennessee, are being offered for sale at about half cost. They were recently rebuilt, and been since run net more than twelve months, and the building and machinery are new and in first-class condition. The machinery is the latest improved. They are located in a good wheat section, and between and adjoining two railroads. Capacity, 150 or 200 barrels flour and two car loads meal in twenty-four hours. Have a fine trade. Address O. W. STOCKWELL, Trustee, Columbia, Tenn. Jy*

FOR SALE.—A bargain for someone with a little capital. Our steam grist mill with two run of burrs, 42-inch, and the necessary cleaning machinery, with planing mill attached, will be sold to a good party for a song, or almost given to him. Situation good, at the crossing of the C. & N. W. R. R., and the C. M. & St. Paul railway, in a rich farming country. Lands joining those of C. & W. Railway, about 1,500 feet from depot. Good run of custom. Reasons for selling, poor health and other business. Terms given on application to I. D. TITSWORTH & CO., Milton Junction, Rock Co., Wis. Jy*

FOR SALE—The Flouring Mills at Troy, Kansas, known as the "Banner Mills," in successful operation, with well-established trade. Location unsurpassed. Railroads in every direction. Fine wheat and corn country. The best county in Kansas. Troy, the county seat, is a thriving town with good schools, etc. The mills have four run of burrs, and the machinery throughout is all first-class. Undoubtedly the best constructed mill in the West. The best opening for business. On account of the ill health of the managing partner the property will be sold at a great bargain. Address Jett TRACY & PARKER, Troy, Kansas.

GRIST MILL FOR SALE AT A SACRIFICE—Merchant and custom mill, situated in Belvidere, county seat of Boone county, Illinois. The mill has four run of French burrs, and all the machinery is of best class; driven by a never-failing stream of water (Kishwaukee river). Mills of this class are seldom offered for sale, but the proprietor is very aged, and wishes to retire. Would sell for one-third cash down, balance on suitable terms, or would sell one-half of mill property. A person with means would do well to investigate immediately. For further particulars apply to the owner or address Box 544, Belvidere, Illinois. JAMES B. MARTYN. autf

FOR SALE.—At La Grange, Mo., A four-run, brick, steam mill, situated on the Mississippi River, and on the St. Louis and Northwestern Railroad. This mill is 99 feet square and four stories high; it also has an L 60 feet long by 30 feet wide, three stories high, furnishing storage room for 10,000 bushels wheat and 5,000 barrels flour; well and substantially built; boilers, engines and machinery almost new; contains 4 runs of old stock French burrs and one pair for regrinding, with ample bolting capacity; 1 separator, 2 smutters, 1 brush scouring machine, 1 purifier, 3 pairs flour and wheat scales, and 1 six-ton wagon scales. This mill is situated in a splendid wheat region, and will be sold at a bargain. Address the LA GRANGE SAVINGS BANK.

FOR SALE.—A Texas flour mill and land; a rare bargain. I offer my steam flouring mill at Trinity Mills, a depot 16 miles from Dallas, Texas, and on the Dallas & Wichita Railroad, for sale at a great sacrifice. The mill has three run of stone, two for wheat and one for corn. It has a capacity of 100 barrels per 24 hours; fine tubular boiler and good but old style engine; stones driven by beveled gear; mill built four years ago and cost over \$9,000. With the mill I will sell 425 acres or more of land, on which near the mill are two dwellings of four rooms each and a large store-house; about 50 acres of superior prairie soil for field crops, fruit and vegetables; the balance is in timber and will afford perpetual fuel for the mill and fine pasturage. It is located on the Elm Fork of Trinity River, and is exceedingly fertile. I will sell the whole to a CASH purchaser for \$15 per acre—not more than the value of the land. There is plenty of wheat raised in the county. Satisfactory reasons for selling. Address immediately. aptf DR. ROY B. SCOTT, Trinity Mills, Texas.

FOR SALE—IMPORTANT TO MILLERS AND CAPITALISTS.—The firm of Porter & Mowbray, having been dissolved by limitation, and being obliged by the terms of their articles of partnership to convert the property of the firm into cash, their Steam Flouring Mill and Elevator, situated and being on lot 1 and 2, block 163, and such part of lot 3 in said block 163, as the Elevator stands upon, being the easterly 30 feet or thereabouts of said lot, all running through to the river, in the city of Winona, Minnesota, will be offered for sale to the highest bidder, on Saturday, August 9th, 1879, at 10 o'clock in the forenoon.

The Mill has been in successful operation for the past five years, has a capacity of 450 barrels per day, and an established trade for its flour in the Eastern markets, where the reputation of its brands stand second to none. The Elevator has a storage capacity of 50,000 bushels. The buildings stand on the banks of the Mississippi, and there is in connection with them a well-built and commodious dock, extending into the river. A railroad track runs to the mill doors, affording every facility for receiving and shipping by both rail and river, having choice of routes, and an unlimited supply of wheat, having the country tributary to the Winona & St. Peter, and C. M. & St. Paul R. R.'s and the river to draw from. An abundance of fuel at low cost can be had, and there is now on the ground, and will be sold at same time, sufficient for some months. There is a large home trade for flour, it being the only mill of any importance in the city. The mill is in good repair, and can be started as soon as the new crop is fit to grind. There will be sold at the same time, Horses, Harnesses, Wagons, Sleighs, a quantity of fuel, and other valuable property required in conducting the business.

To parties contemplating engaging in the milling business, this presents an opportunity seldom offered for securing a desirable property, and an established trade. Sale positive. For further particulars address au PORTER & MOWBRAY, Winona, Minn.

DISSOLUTION.

L. W. Smith, of the firm of Smith Bros., millwrights, steps out of the Company. The business in the future will be carried on under the old name, by Henry, Geo. G. and Fred. A. Smith.

HENRY SMITH, JR.
GEO. G. SMITH.

SMITH BROTHERS, Practical Millwrights.

Plans, Specifications and Estimates made for all kinds of

MILLWORK, MACHINERY, Etc., Etc.

Flour, Sawmill, Tanners' and Brewers' Machinery, and General Mill Furnishers.

No. 454 Canal Street,

MILWAUKEE, WIS.

IMPORTANT TO MILLERS.

The principals of a Cork firm (Ireland), long established and largely connected, are desirous to treat with an extensive miller respectfully for supplies of Flour, Maize, Meal and Oaten-meal, for cash, or usual terms with bankers' guarantee. Prompt communication (including best terms) to B. H., office of this paper, respectfully requested.

SITUATION WANTED.—A practical miller of ten years' experience with winter wheat (best flour on new process) desires a place in a thorough new process mill in any capacity in which he can perfect himself in the art of high grinding (spring or winter wheat). Am 33 years old, industrious and temperate in all things; wages no object; unexceptional references given. Address, A. D. REAMER, June 11. Care of Reamer & Co., Chetopa, Kansas.

Cut This Out.

"United States Miller" Subscription Blank.

We hope the milling friends of the UNITED STATES MILLER will be as liberal to it as it has been in the past, and will be toward them in the future. Subscription price, one year \$1.

We shall be pleased to have an early response to this. Fill out the blank below, enclose with money in an envelope, seal carefully and send at our risk. A receipt will be sent by return mail. Address all communications to the UNITED STATES MILLER, Milwaukee, Wis.

Editor of the UNITED STATES MILLER, Milwaukee, Wis.—Sir: Send one copy of the United States Miller for one year, for which find enclosed \$1.00.

Name _____
Post-Office _____
County _____
State _____

FOR SALE.

Second-Hand Engines,

—AND—

MACHINERY,

—AT—

LOW PRICES!

16x24 in. engine with governor and fly-wheel.
22x36 in. engine with governor, fly-wheel, counter shaft and pulley.
22x34 in. engine with governor, fly-wheel and belt pulley.
16x32 in. automatic cut-off engine with regulator and fly-wheel.
16x20 in. balance and valve engine, with governor, fly-wheel, pump, heater, stack and boiler, 54x14 in., and all pipes and connections.
10x30 in. engine, girder frame, governor and fly-wheel.
12x12 in. upright engine with governor, fly-wheel, and pulley.
One 7-in. Judson governor, bright finish.
One 2-in. Gardner governor and stop valve.
One 4-in. stop valve.
Three sets of Boss Dogs.
One No. 3 Blake boiler feed pump.
13½x28 in. engine with governor and fly-wheel.
A complete set of patterns for engines from 7 to 28 in. bore of cylinder, with rocking valves.
Address,

Ewd. P. Allis & Co., MILWAUKEE, WIS.

Bennett's Patent Elevator Bucket.



Made from one piece of Metal.

CHEAPEST
AND
STRONGEST
BUCKET

Manufactured.
Made of either plain or galvanized iron. Send for Circulars and Price List to

Jely BROWER & BENNETT, FOX LAKE, WIS.

F. A. SMITH
L. W. SMITH.

EXPORT FLOUR.

We are prepared to furnish the trade with any of our well-known brands of Flour, in sacks or barrels. Address all communications to

MILWAUKEE MILLING CO.,

Milwaukee, - Wisconsin.

Mill Pick Works

—OF—

HENRY HERZER,

MANUFACTURER AND DRESSER OF

Mill Picks,

456 Canal Street,

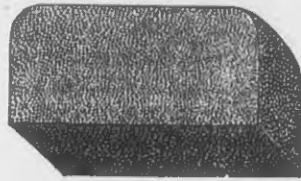
MILWAUKEE,

WISCONSIN.

I desire to call attention to the durability of MILL PICKS made and dressed by me. I manufacture them of the best ENGLISH STEEL, and warrant all work to give satisfaction.

I shall be pleased to receive your orders, as I always have a supply of New Picks on hand, and give particular attention to dressing Picks.

GET THE BEST.



**MILLER'S PATENT COMPOSITION
BURR RUBBER.**

For Cleansing, Sharpening, and Facing Burrs, and Smoothing Furrows.

Warranted to produce a better grinding surface than the Pick or Diamond and save 50 per cent of labor in dressing Burrs and expense for tools. Face Rubber 10 x 6 x 3 in., weight 12 lbs., price \$3.00. Furrow Rubber, 10 x 6 x 1 1/4 or 1 1/2, 1 3/4 or 2 in. as required, price \$2.50 or both for \$5.00. Sent by express on receipt of price. Circulars free. Address all orders to the sole manufacturers, **MILLER & McCARTHY,** Mount Union, Penn.

BOTTLED BEER.

VOECHTING, SHAPE & CO.,

SOLE BOTTLEERS OF

Joseph Schlitz Brewing Company's Celebrated Milwaukee Lager Beer

Cor. Second and Calena Streets,

MILWAUKEE

WISCONSIN.

BOTTLEERS' SUPPLIES CONSTANTLY ON HAND

Parties corresponding will please state where they saw this advertisement.

ROLLER MILLS!

ENTIRELY SUPERCEDING MILL-STONES.

Wegmann's Patent Porcelain Rolls.

Grooved or Fluted Chilled Iron Rolls.

Smooth Chilled Iron Rolls.

All in our Improved Frames, which is the only one made which admits of perfect horizontal and vertical adjustment.

ALL LICENSED UNDER DOWNTON PROCESS PATENT.

The Reynolds-Corliss Engine

Which has given on trial the best economy and regulation known in steam power.

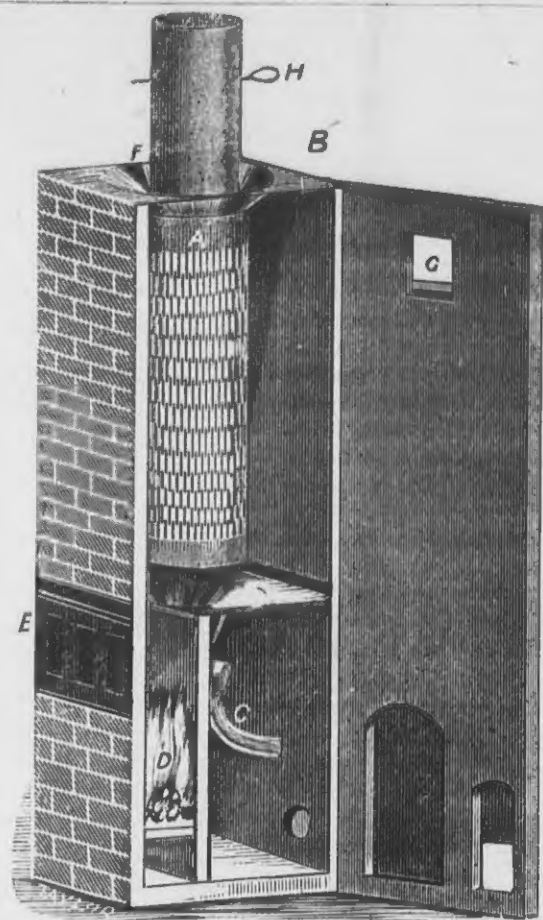
We shall be pleased to correspond with any parties desiring prices and information relative to mill machinery or steam power.

Edw. P. Allis & Co.,

MILWAUKEE, WISCONSIN.

Schroll's Improved GRAIN DRIER.

The Only Recognized GRAIN DRIER by
Millers and Brewers in America.



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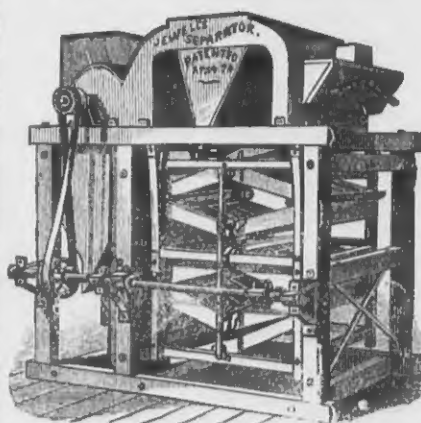
For further information apply to or address

CARL SCHROLL,

Care of C. Schotte.

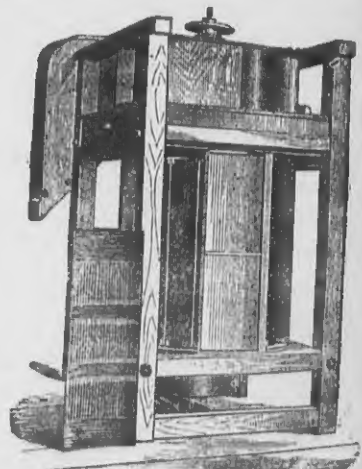
24 and 26 S. Canal St., Chicago, Ill.

THE JEWELL



ADJUSTABLE-SIEVE OAT AND COCKLE SEPARATOR.

**RAKES' ADJUSTABLE
Brush and Beater.**



SMUT MACHINE.

UPRIGHT and HORIZONTAL BRAN DUSTERS.

Machines sent out on their merits, and WARRANTED to give satisfaction. For illustrated circulars and price list address

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JOHN C. HIGGINS,

MANUFACTURER AND DRESSER OF

MILL PICKS

167 WEST KINZIE STREET, CHICAGO, ILL.

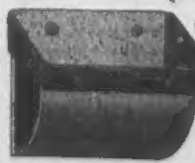
All work fully guaranteed. Responsible parties can have 30 to 60 days' trial on my new work, also on dressing where the Steel is of good quality, and has not been destroyed by working; and if not superior to any work produced in this country, there will be no charge for the same. A stronger warranty is unnecessary for any purpose.



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RIVET (Mill) BUCKET.



These Buckets have a hardware (Japan) finish; are rust-proof, are light, durable and cheap; are of the latest and most approved pattern. Also Belting, Bolts, Scoops, Iron Conveyors, and the SAFETY ELEVATOR BOOT. Special Bucket for Ear Corn. Liberal discount.

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Of every description—Pearl, Ivory, Silver, Celluloid, Shell, Steel and Nickel Plated.

As I am the only party in the world that makes a specialty of Flour Triers, and Patentee and Sole Manufacturer of the

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Flour, Grain and Bolting Cloth Inspector,

I can furnish them of any material, size or color known. I have the exclusive control of the Celluloid Triers, and put them up in all colors and styles—Red, White, Blue, imitation of Malachite, Shell and Pearl. They are perfect beauties, as well as useful articles, as Celluloid is one of the hardest substances known after undergoing a certain process.

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